PHILIPS

32DW6834

MODEL

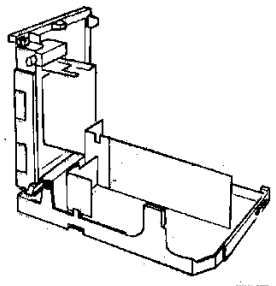
SERVICE MANUAL

Colour television **Chassis**

Service
Service
Service

MD1.2E

AA



Service Manual

Contents

		Page
1.	Technical specifications	2
2.	Connection facilities and Chassis overview	2
3.	Safety instructions for repairs, Maintenance instructions, Warnings and Notes	3
4.	Mechanical instructions	4
5.	Block diagram	6
	Testpoint overview	7
	Wiring diagram	8
6.	Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips	8
7.	*Electrical diagrams and PWB-layouts*	*Diagram* / *PWB*
	Supply voltage diagram	12
	Power supply 21" (Schéma A1)	13 / 14
	Power supply > 21" (Schéma A1)	15 / 14
	Horizontal output (Schéma A2)	16 / 14
	Vertical output (Schéma A3)	17 / 14
	Audio amplifier (Schéma A4)	17 / 14
	Tuner + IF (Schéma B1)	19 / 18
	Video processing (Schéma B2)	20 / 18
	Synchronisation (Schéma B3)	21 / 18
	IF sound (Schéma B4)	21 / 18
	Euroconnector 1 (Schéma B5)	22 / 18
	Euroconnector 2 (Schéma B6)	22 / 18
	Controls (Schéma B7)	23 / 18
	Connections audio module (Schéma B8)	24 / 18
	Teletext (Schéma B9)	24 / 18
	CRT panel (Schéma C)	25 / 25
	Audio module (Schéma D1)	26 / 27
	Nicam L module (Schéma D2)	27 / 27
	CTI/Black Stretch panel (Schéma F)	28 / 29
	N/S panel (Schéma G)	29 / 29
	Mains/RC5/LED panel (Schéma I)	30 / 30
	Control and Input/Output (Schéma J)	31 / 31
8.	Electrical alignments	32
10.	Directions for use	34
11.	List of abbreviations	37
12.	Spare parts lists	39

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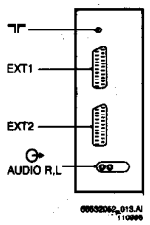
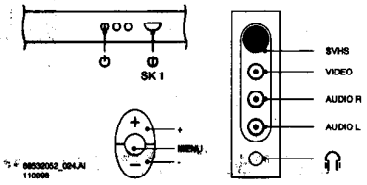
1. Technical specifications

Mains voltage	: 220-240V AC (±10%)
Power consumption	
nominal output power (Watt)	: 100 (21" 90°); 130 (110° SF 4:3); 150 (110° SF 16:9)
peak output power (Watt)	: 160 (21" 90°); 180 (110° SF 4:3); 220 (110° SF 16:9)
standby (Watt)	: 3 (±10%)
Mains frequency	: 50 Hz (±10%)
Pull-in range colour synchronisation	: > ± 300Hz
Pull-in range horizontal synchronisation	: > ± 600Hz

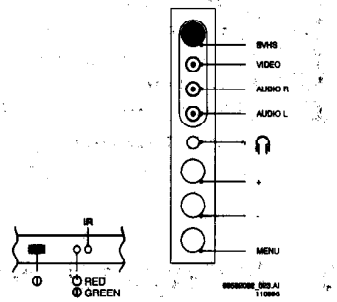
2. Connection facilities and Chassis overview



Rear connections



Front + Top control + Side I/O



Front + Side control + Side I/O

Specification of the terminal sockets

REAR

EXT1 - CVBS (in/out) + RGB (in) - tuner at output

1	-	Audio ⊖ R (0.5V_{RMS} ≤ 1kΩ)
2	-	Audio ⊖ R (0.2-2V_{RMS} ≥ 10kΩ)
3	-	Audio ⊖ L (0.5V_{RMS} ≤ 1kΩ)
4	-	Audio ⊥
5	-	Blue ⊥
6	-	Audio ⊖ L (0.2-2V_{RMS} ≥ 10kΩ)
7	-	Blue ⊖ (0,7V_{pp}/75Ω)
8	-	CVBS status(0-2V: INT; 4,5-7V: EXT1-16/9; 9.5-12V:EXT1-4/3)
9	-	Green ⊥
10	-	
11	-	Green ⊖ (0,7V_{pp}/75Ω)
12	-	
13	-	Red ⊥
14	-	RGB status ⊥
15	-	Red ⊖ (0,7V_{pp}/75Ω)
16	-	RGB status (0-0,4V: INT;1-3V: EXT1/75Ω)
17	-	CVBS ⊥
18	-	CVBS ⊥
19	-	CVBS ⊖ (1V_{pp}/75Ω)
20	-	CVBS ⊖ (1V_{pp}/75Ω)
21	-	Earth screen

EXT2 - CVBS (in/out) + SVHS (in) - Input: EXT2 then output = tuner; input: other then output = input

1	-	Audio ⊖ R (0.5V_{RMS} ≤ 1kΩ)
2	-	Audio ⊖ R (0.2-2V_{RMS} ≥ 10kΩ)
3	-	Audio ⊖ L (0.5V_{RMS} ≤ 1kΩ)
4	-	Audio ⊥
5	-	
6	-	Audio ⊖ L (0.2-2V_{RMS} ≥ 10kΩ)
7	-	
8	-	CVBS status ⊖ (0-2V: INT; 4,5-7V: EXT2-16/9;9.5-12V:EXT2-4/3)
9	-	
10	-	
11	-	
12	-	
13	-	C ⊥
14	-	
15	-	C ⊖ (300mV_{pp}/75Ω)
16	-	
17	-	CVBS ⊥
18	-	CVBS ⊥
19	-	CVBS ⊖ (1V_{pp}/75Ω)
20	-	CVBS/Y ⊖ (1V_{pp}/75Ω)
21	-	Earth screen

Cinch - audio out

- ⊙ CINCH Audio L (red) ⊖ (0.5V_{RMS} < 1kΩ)
- ⊙ CINCH Audio R (white) ⊖ (0.5V_{RMS} < 1kΩ)

FRONT

Audio/video in

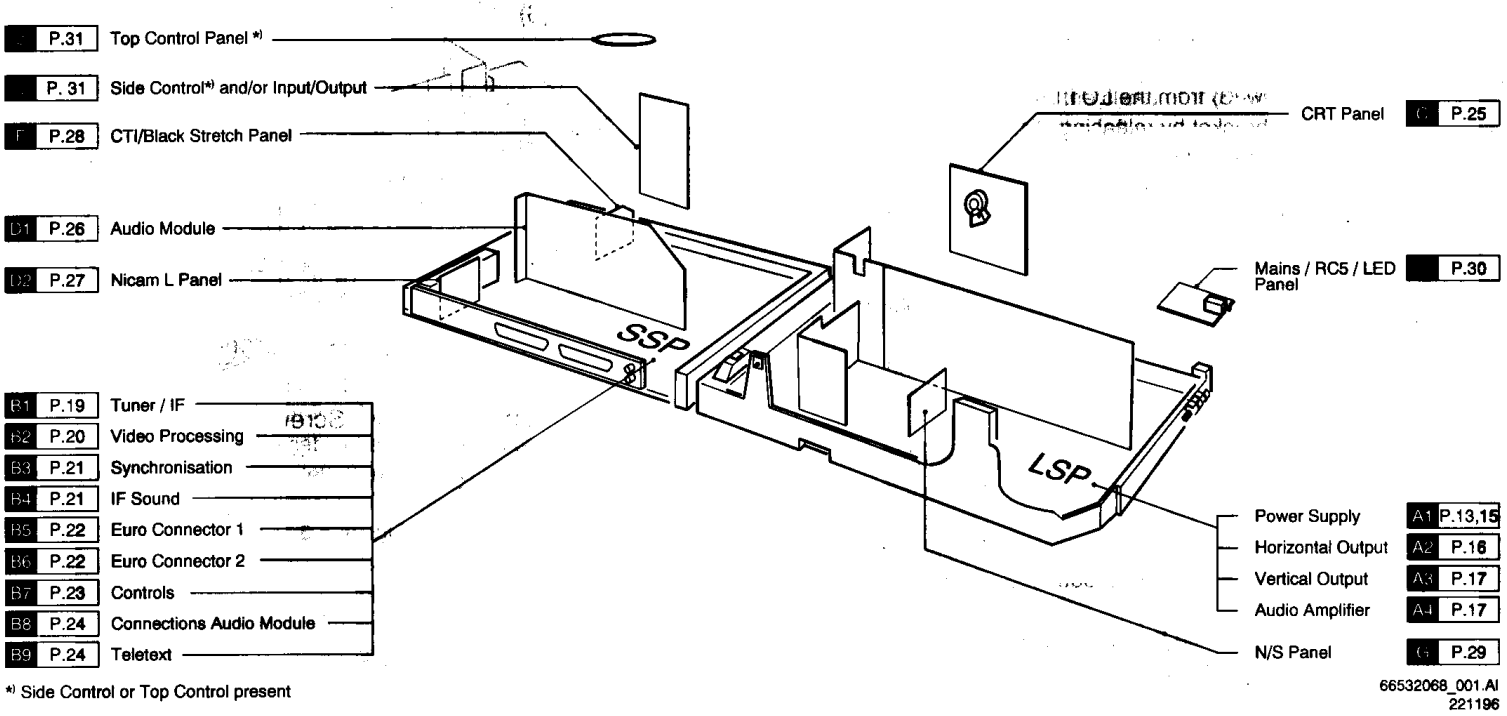
- ⊙ CINCH CVBS ⊖ (1V_{pp}/75Ω)
- ⊙ CINCH Audio L (red) ⊖ (2V_{RMS} ≥ 10kΩ)
- ⊙ CINCH Audio R (white) ⊖ (2V_{RMS} ≥ 10kΩ)

Headphone

8-600Ω

SVHS

1	-	⊥
2	-	⊥
3	-	Y ⊖ (1V_{pp}/75Ω)
4	-	C ⊖ (0,3V_{pp}/75Ω)


P.31 Top Control Panel *)
P. 31 Side Control*) and/or Input/Output
F P.28 CTI/Black Stretch Panel
D1 P.26 Audio Module
D2 P.27 Nicam L Panel
B1 P.19 Tuner / IF
B2 P.20 Video Processing
B3 P.21 Synchronisation
B4 P.21 IF Sound
B5 P.22 Euro Connector 1
B6 P.22 Euro Connector 2
B7 P.23 Controls
B8 P.24 Connections Audio Module
B9 P.24 Teletext
CRT Panel C P.25
Mains / RC5 / LED Panel P.30
SSP
LSP
Power Supply A1 P.13,15
Horizontal Output A2 P.16
Vertical Output A3 P.17
Audio Amplifier A4 P.17
N/S Panel G P.29
*) Side Control or Top Control present
66532068_001.AI
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3. Safety instructions for repairs, Maintenance instructions, Warnings and Notes

Safety instructions for repairs

1. Safety regulations require that during a repair:
- the set should be connected to the mains via an isolating transformer;
- safety components, indicated by the symbol ▲ should be replaced by components identical to the original ones;
- when replacing the CRT, safety goggles must be worn.

2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
- As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
  - all pins of the line output transformer (LOT);
  - fly-back capacitor(s);
  - S-correction capacitor(s);
  - line output transistor;
  - pins of the connector with wires to the deflection coil;
  - other components through which the deflection current flows.

Note:
This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.
- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply).
  This check can be done as follows:
  - unplug the mains cord and connect a wire between the two pins of the mains plug;
  - set the mains switch to the on position (keep the mains cord unplugged !);
  - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
  - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- when the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years;
- when the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:

- execute the above mentioned "general repair instruction";
- clean the power supply and deflection circuitry on the chassis;
- clean the picture tube panel and the neck of the picture tube.

Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).

2. **ESD**

   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth ot the unit.
   Keep components and tools also at this same potential.

3. Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.

4. Be careful when taking measurements in the high-voltage section and on the picture tube.

5. Never replace modules or other components while the unit is switched on.

6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth (⊥), or hot earth (⊥) as this is called.

2. The direct voltages and oscillograms shown in the diagrams should be measured in the **Service Default Mode** (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3. Where necessary, the oscillograms and direct voltages are measured with (⊓) and without aerial signal (⊗). Voltages in the power supply section are measured both for normal operation (⏻) and in standby (⏻). These values are indicated by means of the appropriate symbols.

4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

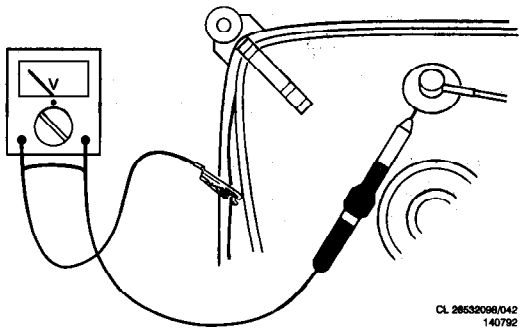

Figure 3.1

6. DOLBY SURROUND
   PRO • LOGIC

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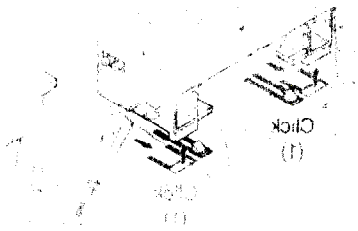


4. Mechanical instructions

The MD1.2E chassis has two different mechanical executions.

4.1 Styling with top control and side input/output (also applicable for MD1.1E Widescreen)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
   - 4 Screws are located at each corner of the cabinet.
   - 2 Screws are located at the left and right bottom corners of the rear cover.
   - 4 Screws are fixed at the 4 corners of the I/O panel with the Euroconnectors and aerial input.
2. The rear cover is now held in position by 6 clicks between the cabinet and the rear cover. There are 2 clicks at the left, 2 at the right and 2 at the top. After loosening all clicks (by releasing them with a screwdriver), the rear cover can be removed.
3. The cover plate on the I/O panel with the Euroconnectors and aerial input can be removed in the following way: remove the screw in the middle, release the click connection at the bottom and lift the cover plate.

Process position

The process position provides easier access to the entire chassis.

1. Release the mains cord from its fixation brackets.
2. Push back the clicks between bottom plate and rear cover and pull the cabinet at the same time backwards.

For some service positions cables may have to be removed from their cable clamps and channels.
Afterwards, put the cables back in their original position.

Service positions

Small Signal Panel (SSP) component side (Figure 4.1)

1. Push down the clicks of the SSP bracket (1) and shift the SSP to the left.
2. Pull up the SSP and tilt the SSP counter clockwise to a horizontal position (180° with Large Signal Panel (LSP)).
3. Put the SSP in the clicks (2) marked "Service" on the bottom plate.

When all cables on the SSP are disconnected, the SSP can also be removed from its bracket (**Figure 4.2**), providing better access to component and copper side.

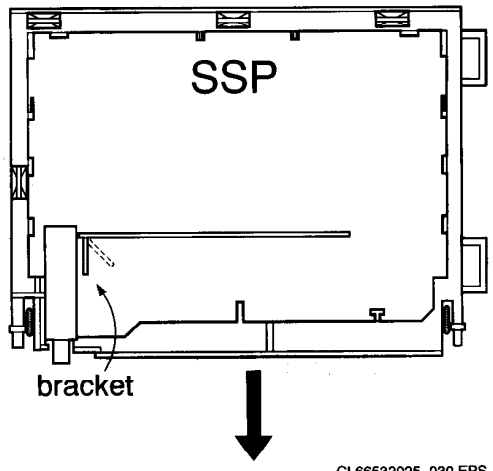


Figure 4.2

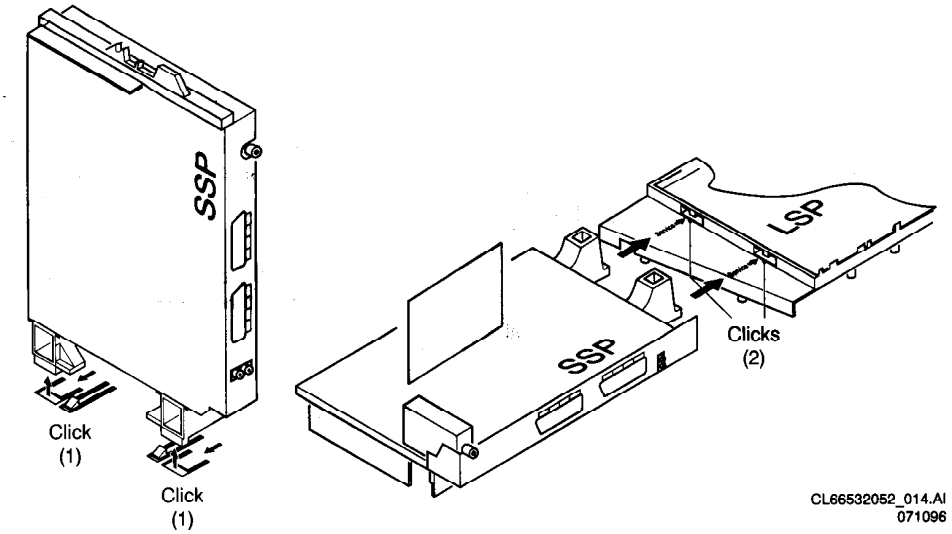


Figure 4.1

LSP component side (Figure 4.3)

1. Put the SSP in the horizontal service position as described above.
2. Remove screw (3) from the LOT bracket.
3. Remove the bracket by releasing click (4) and pulling the bracket upwards.
4. Release clicks (5) and (6).
5. Lift the LSP PWB out of its bracket (indicated by the arrow) and pull it a little back.

Warning! *The heat sinks are not connected to ground.*

LSP copper side *with table/workbench* (Figure 4.4)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP).
2. If necessary, disconnect the cable on the left loudspeaker.
3. Lift the LSP from its bracket as described above (LSP component side).
4. Turn the LSP underneath the CRT panel (keep cable S15/L15 UNDER the audio module) as indicated by the arrow (7).

The LSP now rests on the bottom plate, held in place by the cable clamp on the heat sink and the LOT bracket.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

SSP and LSP copper side *without table/workbench* (Figure 4.5)

For this service position MD1 cable extension kit (service code number 4822 320 11695) is required.

1. Break the service pin (marked M1 - see Figure 4.3) from its position at the right hand side of the bottom plate.
2. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP) and the cable on the left loudspeaker.
3. Remove cables S10/L10, S11/L11 and S15/L15 from LSP to SSP and cable I28/L28 from Audio module to LSP.
4. Lift the LSP from its bracket as described earlier (LSP component side).
5. Put the LSP to the vertical position (Figure 4.5), copper side at the right hand, LOT above (8). For this position, special grooves are made in the bottom plate of the cabinet.
6. Fix the position of the LSP by putting the service pin between LSP (heat sink) and bottom plate (9). There are special holes in the heat sink and the bottom plate to put the service pin in.
7. Reconnect cable I28/L28.
8. Use the cables from the MD1 cable extension kit to reconnect connectors S10/L10, S11/L11 and S15/L15.

Warning! *All cables should be reconnected correctly.*

After use the service pin can be placed in the spare hole at the right hand side in the bottom plate.

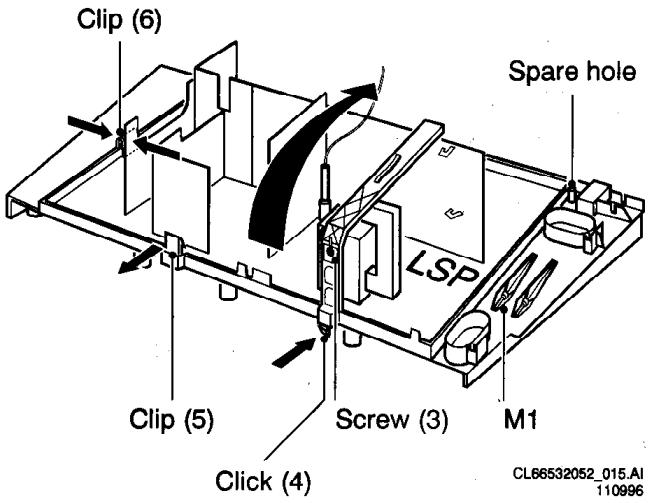


Figure 4.3

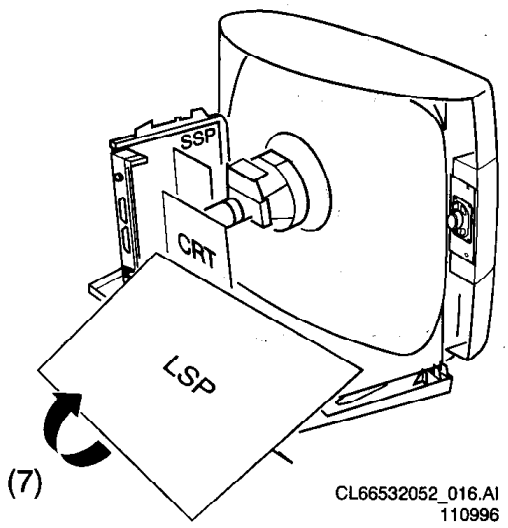


Figure 4.4

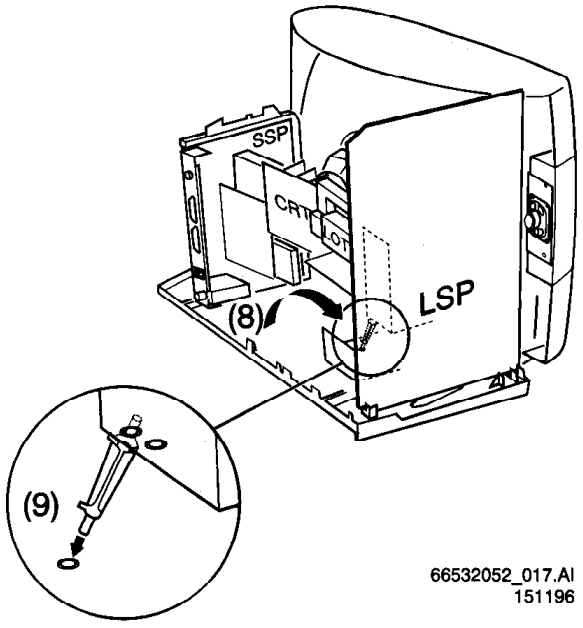


Figure 4.5

Mechanical instructions

Accessing the module with mains switch, LED and RC5 receiver (Fig. 4.6)

1. Cut the tie rap of the degaussing coil at the left hand bottom side (10). Remove the degaussing coil in the left bottom corner from its fixation bracket (11) to get more space to handle the mains module.
2. Remove the red mains panel bracket by lifting the end and pulling it backwards (12).
3. To get more movement space, the left top of the cabinet can be pushed or pulled upwards (13).
4. The mains panel can now be removed.

Afterwards the degaussing coil should be retied at position (10).

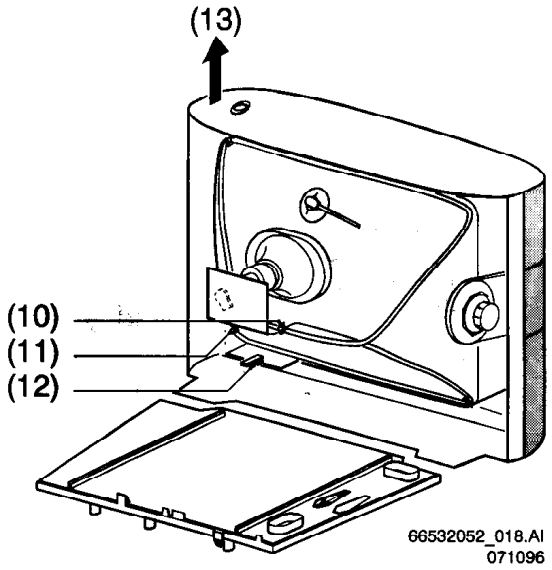


Figure 4.6

4.2 Styling with side control and side input/output (no top control)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
   - 6 Screws are located at the corners of the cabinet.
   - 2 Screws are located at the left and right bottom of the rear cover.
   - 3 Screws are located just above, under and left of the cover plate of the I/O connections.

For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Process position

The process position provides easier access to the entire chassis during the service positions.

1. The chassis can be lifted, pulled forward (± 5cm) and fixed in the bottom plate.
2. When the clicks between bottom plate rear cover are pushed back, the chassis and the bottom plate can be pulled backwards.

Service positions

SSP copper and component side, module servicing (Figure 4.7)

1. Release the click construction (14) between the SSP and LSP.
2. Lift the SSP a little and turn it to an angle of 135° (15) or 180° (16) from the LSP.
   This provides better access to the component side of the SSP and also allows for the removal of modules.

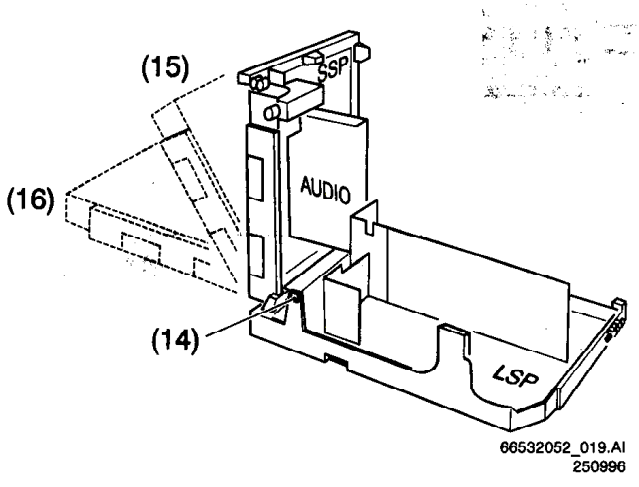


Figure 4.7

Service position with table/workbench (Fig. 4.8)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and pull it backwards (17).
3. Turn the entire chassis around the CRT panel (18).
   The chassis rests on the SSP with the copper side of the LSP backwards.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

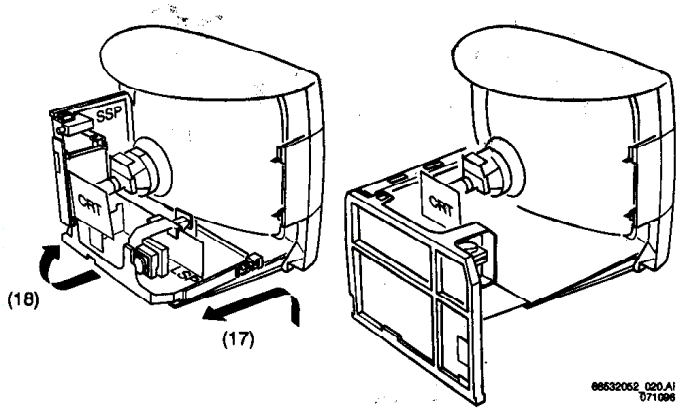


Figure 4.8

Service position (LSP copper side) without table/ workbench (Fig. 4.9)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and turn it counter clockwise (19).
3. The SSP can be fixed with a screwdriver to the bottom plate (20). The copper side of the LSP can now be accessed.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

Small Signal Panel (Fig. 4.2)

First, remove all cables connected to the Small Signal Panel. The SSP can be removed by sliding it out of the SSP bracket (in the direction of the arrow).

Large Signal Panel (Fig. 4.10)

After removing the screw (21), and pushing back the clips (22), the LSP can be lifted out the bracket as indicated by the arrow.

Accessing the panel with mains switch, LED and RC5 receiver

The mains module is located in the middle of the set, below the picture tube.

1. Push the clicks between bottom plate and rear cover back and pull the chassis back as far as possible.
2. Release the click construction (14 - Fig. 4.7) between the SSP and LSP, lift the SSP a little and turn it to an angle of 180° (16 - see Fig. 4.7) from the LSP.
   The mains panel can now be accessed when reaching over the SSP/LSP.
3. Remove the 2 screws left and right on the mains panel bracket.
   The complete mains panel can now be removed by pulling it backwards.

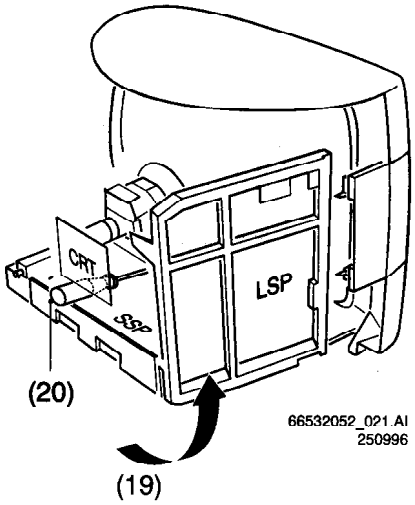


Figure 4.9

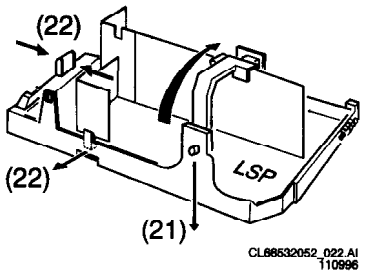
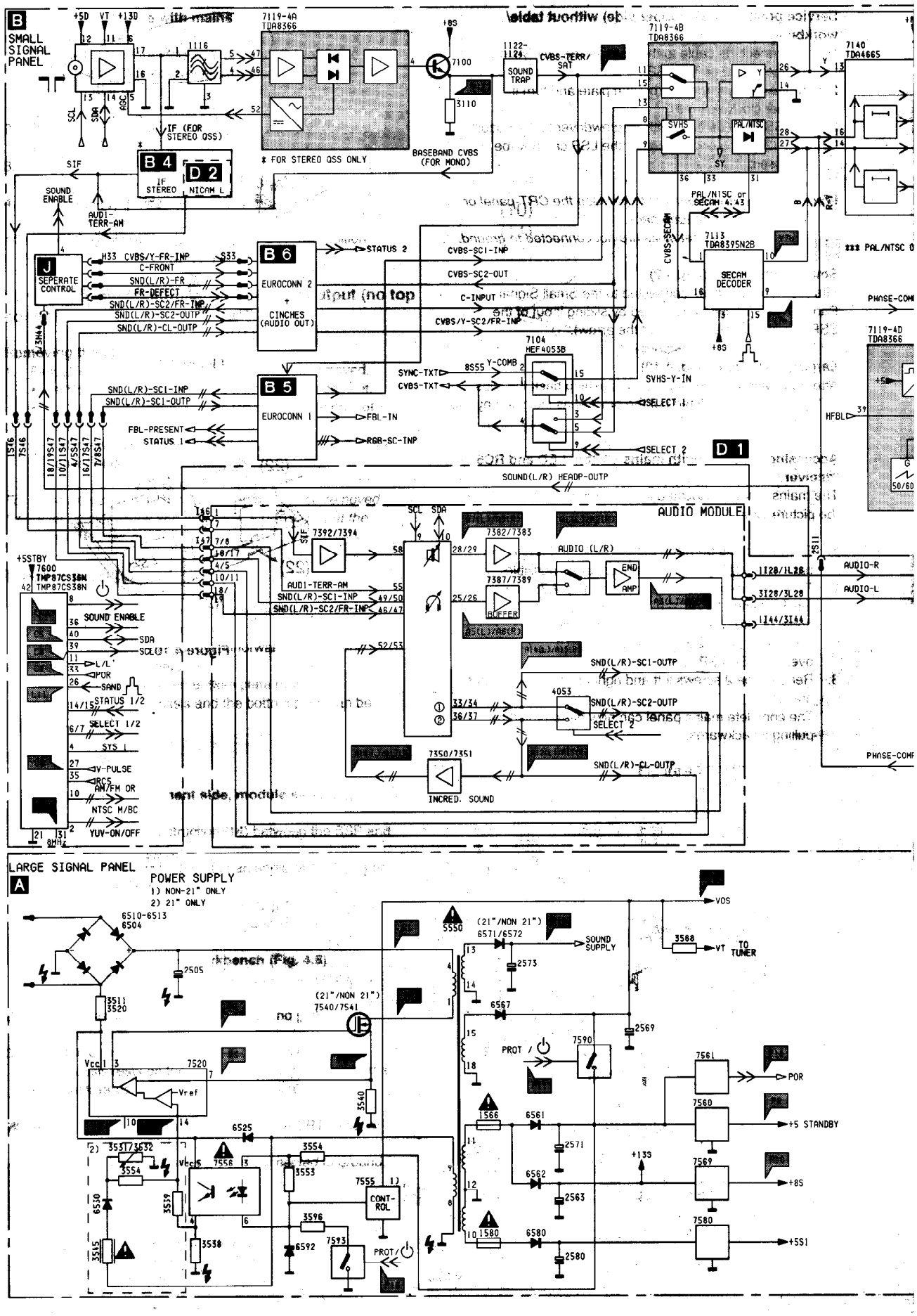
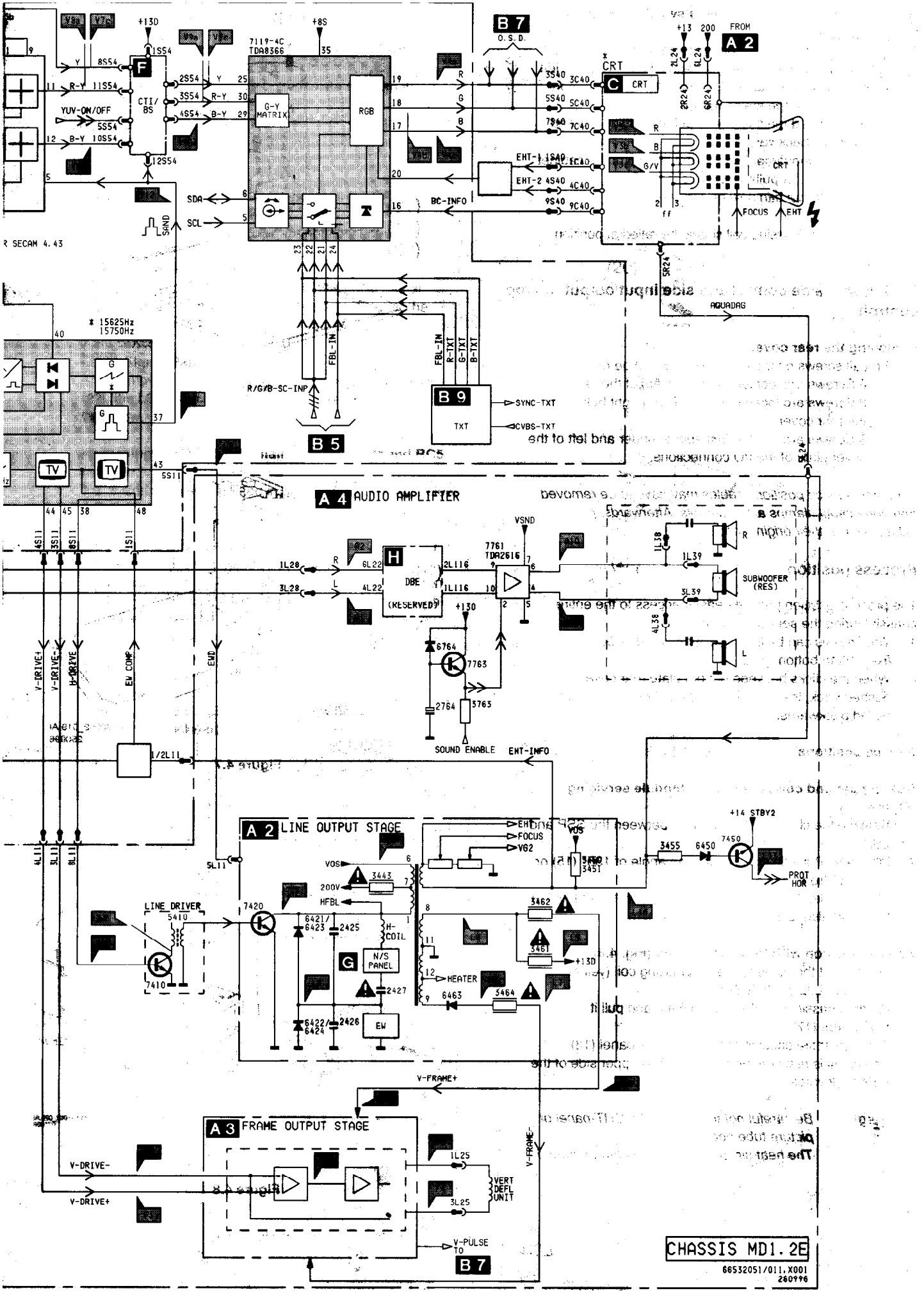


Figure 4.10

5. Block diagram / Blockschaltbild / Schéma-bloc




+13D
+8S
7119-4C
TDA8366
B 7
O.S.D.
CRT
C CRT
FROM A 2
+13
200
2L24
6L24
2R24
6R24
F
CTI/
BS
YUV-ON/OFF
G-Y
MATRIX
RGB
SDA
SCL
SAND
BC-INFO
EHT-1
EHT-2
FOCUS
EHT
R SECAM 4.43
* 15625Hz
15750Hz
AQUADAG
FBL-IN
R-TXT
G-TXT
B-TXT
R/G/B-SC-INP
B 5
B 9
TXT
SYNC-TXT
CVBS-TXT
A 4 AUDIO AMPLIFIER
VSND
7761
TDA2616
DBE
(RESERVED)
SUBWOOFER
(RES)
6764
7763
2764
3763
SOUND ENABLE
EHT-INFO
V-DRIVE+
V-DRIVE-
H-DRIVE
EW CONV
EW
A 2 LINE OUTPUT STAGE
LINE DRIVER
5410
7410
7420
VOS
200V
HFBL
H-
COIL
N/S
PANEL
EW
HEATER
6463
+13D
+14 STBY2
7450
6450
3455
PROT
HOR
V-FRAME+
V-FRAME-
A 3 FRAME OUTPUT STAGE
V-DRIVE-
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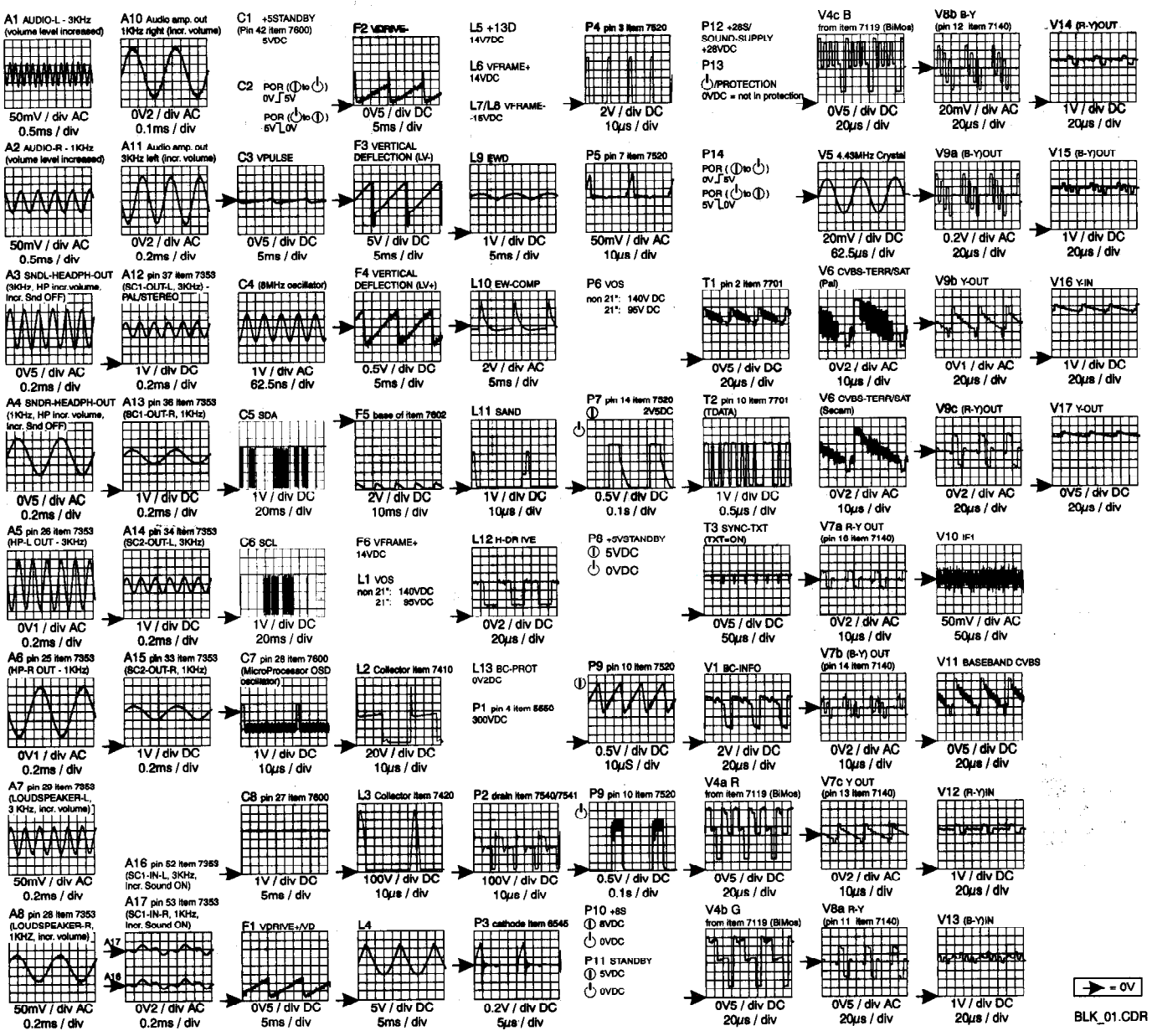


( ) CONNECTORS US...

6. Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips

In this chapter the following paragraphs are included:

6.1 Test points
6.2 Service Modes and Dealer Service Tool (DST)
6.3 Error codes and "blinking LED" procedure
6.4 Protections
6.5 Fault finding and repair tips

6.1 Test points

The MD1 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

* A1-A2-A3, etc.: Test points for the audio processing circuitry
* C1-C2-C3, etc.: Test points for the control circuitry
* F1-F2-F3, etc.: Test points for the frame drive and frame output circuitry
* L1-L2-L3, etc.: Test points for the line drive and line output circuitry
* P1-P2-P3, etc.: Test points for the power supply
* T1-T2-T3, etc.: Test point for the teletext circuitry
* V1-V2-V3, etc.: Test points for the video processing circuitry

6.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer remote control RC7150 is introduced. The RC7150 can be used for all new TV sets, including all set of the MD1 chassis. The RC7150 is also called Dealer Service Tool or DST. The ordering number of the DST (RC7150) is 4822 218 21232.

6.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets, TV-settings, Dish settings.

10 Different program tables can be programmed into the DST via a GFL or MD2 TV-set (downloading from the GFL or MD2 to the DST; see GFL or MD2 service manuals) or by the DST-I (DST/PC interface; ordering code 4822 218 21277). For explanation of the installation features of the DST, the directions for use of the DST are recommended (For the MD1 chassis, download code 4 should be used).

6.2.2 Diagnose features for the servicer

The MD1.2 sets can be put in the two service modes via the DST RC7150. These are the Service Alignment Mode (SAM) and the Service Default Mode (SDM). SDM can also be entered by short circuiting the "service" pins on the SSP.

6.2.2.1 Service Default Mode (SDM)

Entering the SDM:
- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool.
- By temporarily shorting pins S42 and S43 on the Small Signal Panel.

Exiting the SDM:
- Switch the set to stand-by (the error buffer is also cleared).

Note: *When the mains power is switched off while the set is in SDM, the set will enter to SDM immediately when the mains is switched on again.*

The SDM has the following pre-defined conditions for all microprocessor controlled tuning and linear functions:
- For recognition of the SDM "SER" is displayed at the top of the screen.
- Tuning at 475.25 MHz (Secam on Multi-France sets (with Nicam L), PAL on other sets).
- Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%.
- Auto switch off disabled (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).
- Sleep timer is disabled.
- All other controls operate normally.
- *When the microprocessor supports the "blinking LED" procedure (See 6.3) and an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the last error code.*
  This function will also work when there is no sound or picture.

6.2.2.2 Service Alignment Mode (SAM)

Entering SAM:
- By transmitting the "ALIGN" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SDM).
- By pressing the "MENU" and "-" key on the local keyboard simultaneously when the set is in SDM.

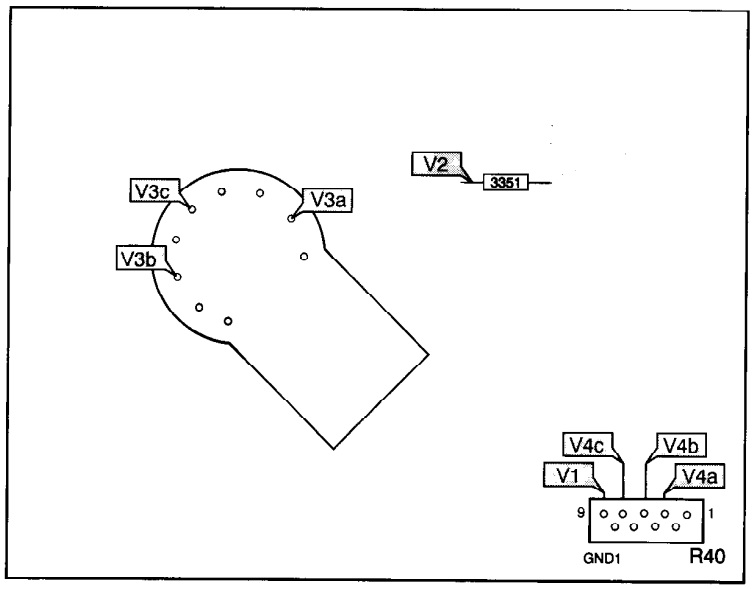
Exiting SAM:
- Switch the set to stand-by.

Note: *When the mains power is switched off while the set is in SAM, the set will enter SDM immediately when the mains is switched on again.*

In the SAM the following information is displayed on the screen:
- Software version (the software version of the microprocessor in the set is displayed. This software version identification corresponds with the software versions in the Software Survey as published in the Product Survey.
- Error code buffer (see paragraph 6.3).
- Options (see paragraph 8.4).
- Alignment and geometry information (see paragraph 8.2.1, 8.3.1 and 8.3.2).

Testpoint overview / Testpunkt Übersicht / Relevé des points de test

CRT panel / CRT-Platine / Platine tube cathodique



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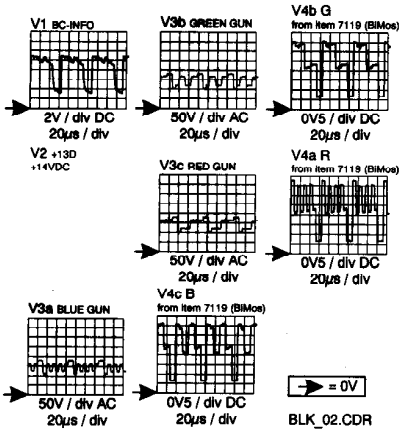
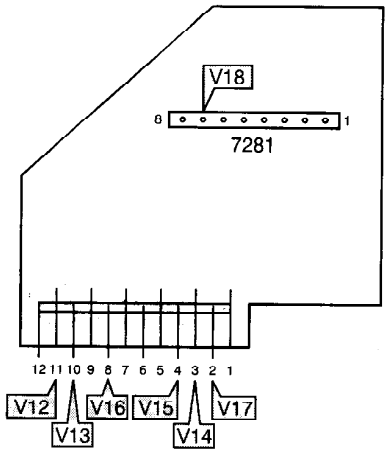


CTI/Black Stretch panel / CTI/Black Stretch Platine / Platine CTI/Black Stretch



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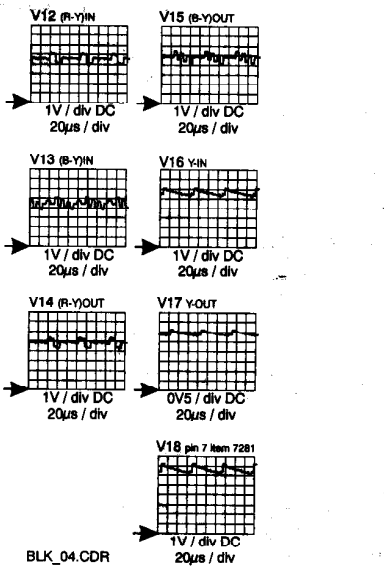
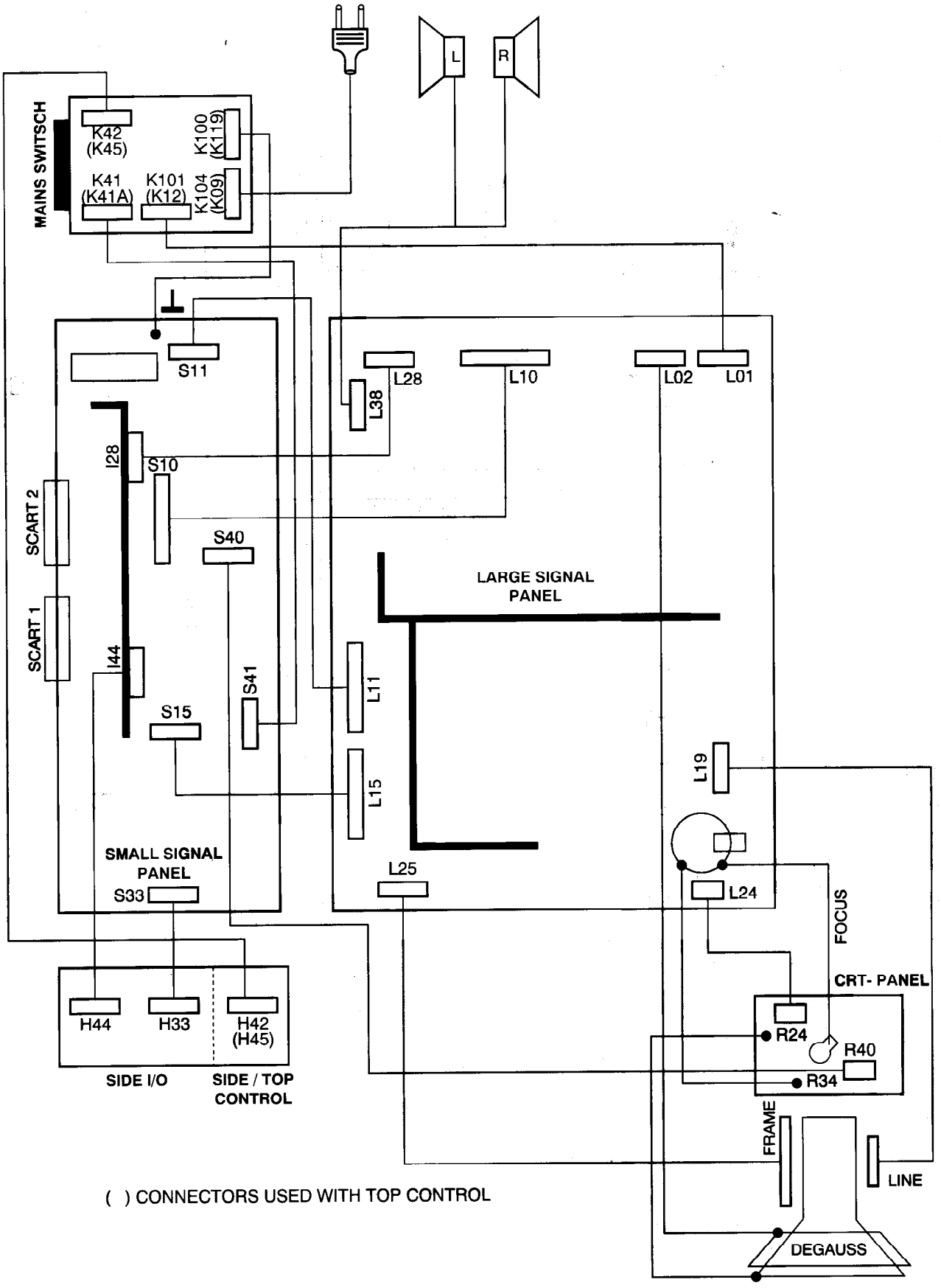


Wiring diagram / Verdrahtungsschema / Schéma de câblage



( ) CONNECTORS USED WITH TOP CONTROL

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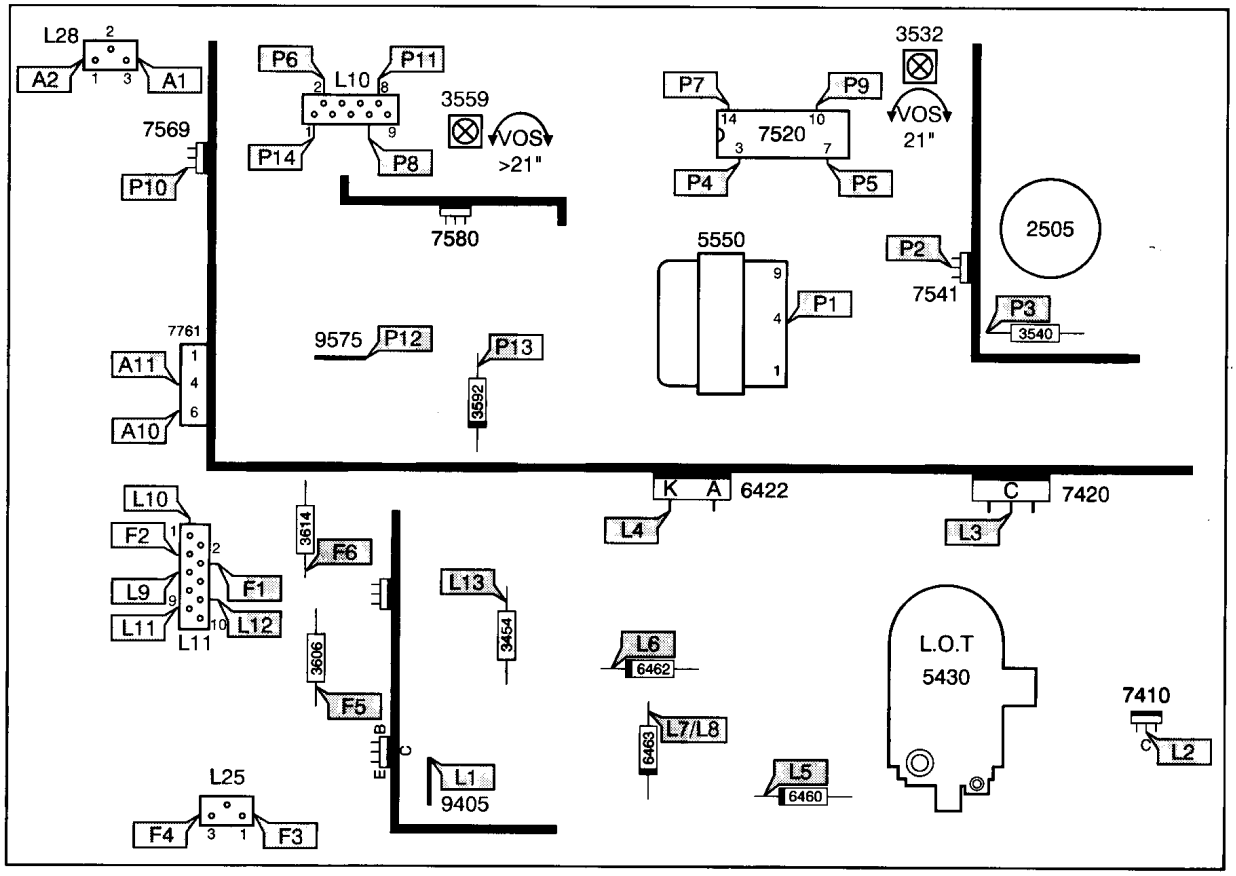
Testpoint overview / Testpunkt Übersicht / Relevé des points de test

Large signal panel / Groß-Signal Platine / Platine forts signaux



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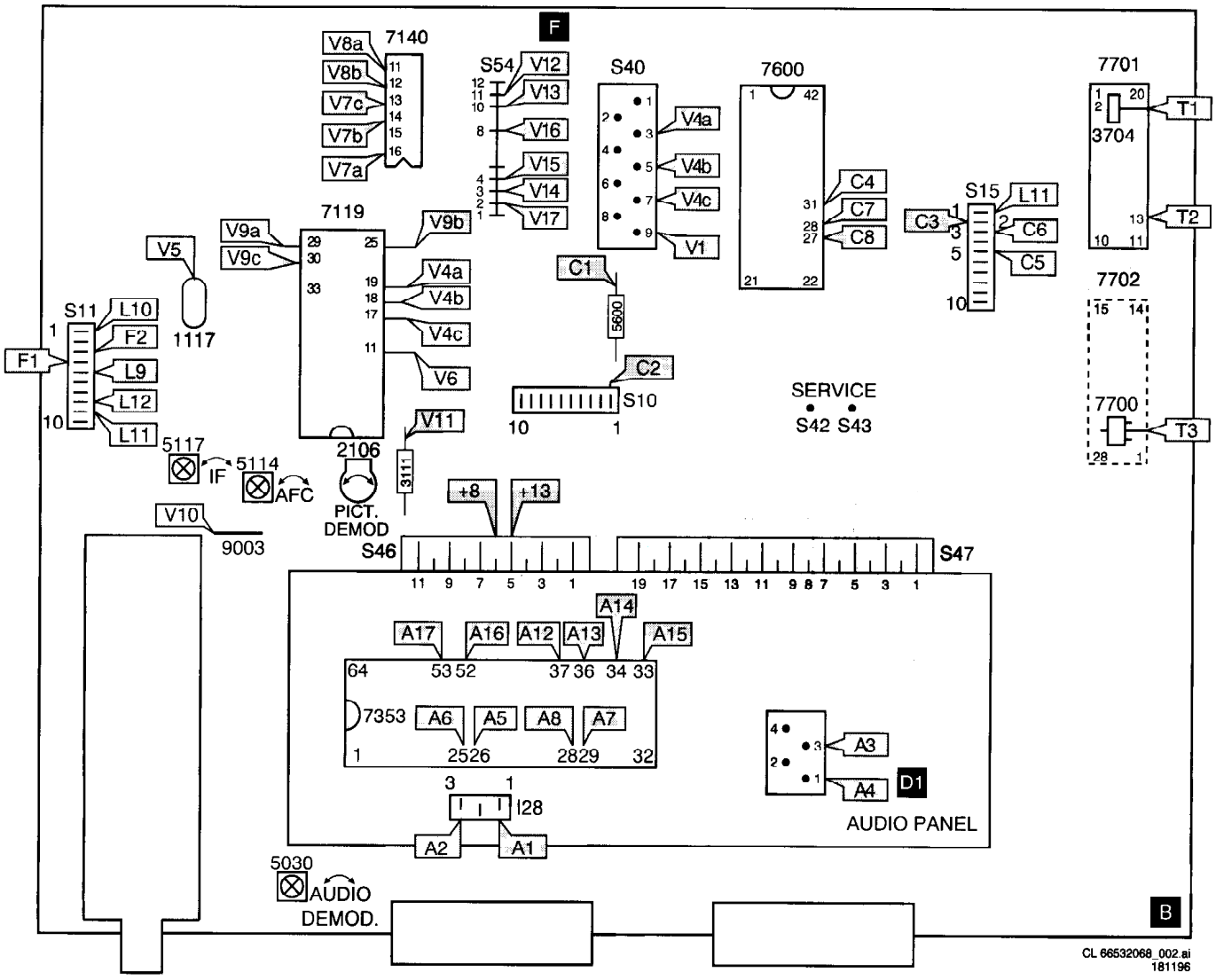
Small signal panel / Klein-Signal Platine / Platine petits signaux



(1) Software version
(2) Error buffer
(3) Options
(4) Alignments and geometry

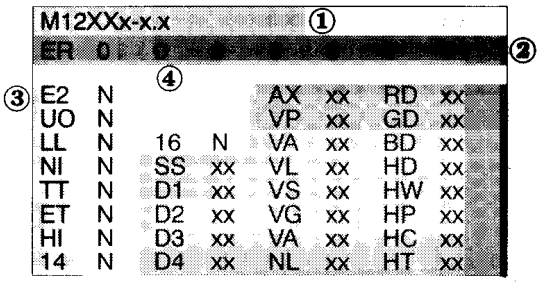


Figure 6.1 **Screen of the Service Alignment Mode (SAM)**

6.3 Error codes and "blinking LED" procedure

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right.

- The last error detected (actual) is the error at the left side
- The error buffer will be reset in the following cases:
  1. exiting the SAM with the "standby" command on the remote control
  2. transmitting the commands "DIAGNOSE 9 9 OK" with the DST
- By leaving the SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR:	0 0 0 0 0 0:	No error code detected
ERROR:	3 0 0 0 0 0:	Error code 3 is the last and only detected error
ERROR:	5 3 0 0 0 0:	Error code 5 first and error code 5 last detected

The contents of the error buffer can also be made visible through the "blinking LED" procedure. This is especially useful when there is no picture. There are two methods:

1. When the SDM is entered, the LED will blink the number of times, equal to the value of the *last* error code. The LED will stay off briefly and blink again the number of times, equal to the value to the *last* error code
2. With the DST *all* error codes in the error buffer can be made visible. While in SDM, transmit the command: "DIAGNOSE *x* OK" where *x* is the position in the error buffer to be made visible. *x* ranges from 1, (the last (actual) error) to 7 (the first error)
   The LED will operate in the same way as in point 1, but now for the error code on position *x*.

Example:

Error code position	*1 2 3 4 5 6 7*
Error buffer	**2 4 1 0 0 0 0**

- *after entering SDM*

blink (2x) - *pause* - blink (2x)

- *after transmitting* "DIAGNOSE 2 OK" *with the DST*

blink (4x) - *pause* - blink (4x)

- *after transmitting* "DIAGNOSE 3 OK" *with the DST*

blink - *pause* - blink

- *after transmitting* "DIAGNOSE 4 OK" *with the DST*

nothing happens

Note! *Note that it may take up to 7 seconds before the set respons to a DIAGNOSE command. Interruption of the blinking sequence may lead to incorrect results.*

Important! *Not all software versions of the MD1.2E chassis support the blinking LED procedure and the DIAGNOSE 99 command. Software versions NOT supporting the blinking LED procedure are M12BAx-x.x and M12COx-3.x.*

Error code	Error description	Blinking LED	Possible defective components
0	No error detected	—	—
1	BIMOS (TDA8366) error	1x	IC7119 (SSP)
2	MSP3400/3410 error	2x	IC7353 (SSP)
3	I^2C bus error	3x	All I^2C-related components
4	Wrong EEPROM	4x	IC7685 (SSP)
5	EEPROM defective	5x	IC7685 (SSP)
6	Tuner error	6x	U1000 (SSP)
7	TXT error	7x	IC7702 (SSP)
8	Histogram Proc. error	8x	IC7210 (reserved)
9	16:9 processor error	9x	IC7440 (16x9 module)
10	WSSB module error	10x	IC7540 (WSSB module)
11	Dolby processor error	11x	IC7600 (Audio module)

Table 6.1 Error code list

Protections, Faultfinding and Repair tips

6.4 Protections

6.4.1 In the MD 1.2E the following protections are possible:

Protections generated by the power supply:

- Overload protection → Hick up mode
- Underload → Hick up mode
- Over voltage → Hick up mode
- Under voltage → Hick up mode

Deflection:

- Horizontal Protection → Supply to standby
- EW-Protection → Supply to standby
- Vertical Protection → BIMOS standby mode

Software protection

- BIMOS IC7119 defective → (Error code 1)
  Set can be switched between standby and ON, but there is no picture, no OSD, sound is only noise.
- SDA or SCL shorted → (Error code 3)
  Set is switched to standby via standby line, set tries to restart.
- No +5Db or +8Sc at μC → Set is switched to standby via standby line, set tries to restart.

6.4.2 Power supply protections

The power supply will go to a very good audible hick-up mode in the following situations:

- Overload protection
- Under load
- Over voltage
- Under voltage

In hick-up mode
Pin 1 of IC7520 starts up from the start circuit for approximately 2 seconds, immediately after that the protection is activated. This cycle is constantly repeated in hick-up mode. When the set is in hick-up mode a short squeak is audible every 2 seconds.

6.4.3 Horizontal-protection

When the beam current becomes too high for a long period the voltage across C2450 will drop. D6450 will start conducting and as soon as the voltage drop across R3456 is 0V7, TS7450 will conduct, making PROT high.
Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

6.4.4 EW-protection (not for 21" sets)

The East/West protection switches the power supply to standby via the signal line STANDBY-SUPPLY PROTECTION. Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

The East/West protection detects when the current through the East/West power output stage with TS7480 is too high.

Note: *A current through the East/West stage that is too high can be caused by a defective part in the line-deflection circuitry!*

The current through the East/West stage is measured on the LSP via 2 precision resistors (R3483 and R3484).
In case of a line problem, the east/west-current becomes too high and the voltage across resistors R3483 and R3484 rises. When the voltage level exceeds 0.6V, D6480 starts to conduct and STANDBY-SUPPLY PROTECTION becomes HIGH. When the voltage across C2480 is very high
(e.g. when a line problem is already present when the set is switched on with the mains switch), D6481 and D6482 conduct and EW-PROTECTION is activated very fast.

The East/West protection becomes active in the following cases:

1. Bad contacts of horizontal deflection circuit:
   - bad contacts of horizontal deflection coil
   - bad contacts of linearity corrector coil L5421
   - bad contacts of S-correction capacitor C2427
2. Bad contacts of flyback capacitor C2425.
3. Shorted flyback diode D6421 or D6423.
4. Shorted S-correction capacitor C2427.
5. Bad solder contacts in the line output stage.

When EW-protection has been active, the line output transistor 7420 may also be defective.

6.4.5 Vertical-protection

The vertical output stage creates
VERTICAL-PROTECTION pulses at every flyback pulse when it is functioning correctly. These pulses are sensed by the BIMOS IC7119-4D on pin 37. When the pulse train is interrupted, the BIMOS will switch to BIMOS STANDBY mode. In the BIMOS STANDBY mode, the BIMOS switches off the VDRIVE+ and VDRIVE- while the RGB outputs are blanked. Circuit breaker 1463 may be open. Probably, the line output stage will not work and the power supply will switch to hick-up mode (under voltage protection).

6.4.6 Software protection

The software protection is managed by the microprocessor. It continuously verifies the presence of the +5 and +8 supply voltages on pin 34 and the activity of the I²C bus. When the protection becomes active, the software will switch the power supply on and off continuously via the STANDBY line. In this situation the power supply produces a squeaking sound.

- I^2C protection
  The I^2C bus is controlled at each I^2C-command. Therefore every I^2C command has a defined start/stop condition. When the defined start/stop condition is repeatedly incorrect, error 3 is placed in the error buffer and the set switches to software protection.
  I^2C-protection is generated in the following situations:
  - SDA shorted to earth
  - SCL shorted to earth
  - SDA and SCL shorted

  When SCL or SDA is shorted, the set tries to restart and the LED lights in a clearly recognisable pattern.
  - SDA/SCL shorted when the set is switched ON with the mains switch:
    LED is 8 seconds RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
  - SDA/SCL shorted during operation
    LED is 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.

- +5Db and +8Sc protection of the microprocessor
  +5Db and +8Sc are the main supply voltages of the entire small signal processing of the set. At pin 34 the microprocessor senses whether the supply voltages +5SDb or +8Sc coming from the power supply are present. When one or both the supply voltages are missing, the set switches to software protection.

6.5 Fault finding and repair tips

Note that for 21" sets, voltages and wave forms may differ.

6.5.1 General

LED indication after start-up procedure is completed
- No LED
  Set is switched OFF, supply problem or microprocessor problem.
- LED continuously
  Set is in standby, control part defective, standby mode defective.
- LED blinking
  Set in SDM, transmitting error buffer.

Audible checks
- Demagnetisation audible: mains voltage is present at LSP.
- EHT audible: supply is operational (line output stage only works in case VOS (+140V for 25 & 29"; +95V for 21") is present.
- Hick-up sound power supply audible: power supply is shorted. Check the LOT (item 5430) and the line output transistor TS7420.

6.5.2 Fault finding in the power supply

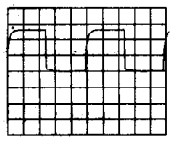
In case of a power supply problem, the power supply can be simplified to a stand alone power supply at low voltages (low risk) as follows:

Control part of the power supply
1. Disconnect the SSP (as a result the line will not function any more and therefore will no longer be a load of the power supply) or disconnect the line by removing jumper 9400 and R3400 (if present) on the LSP.
2. Connect an external DC power supply between supply pin 1 IC7520 (via a diode - e.g. BYD33D - with cathode to supply pin 1 IC7520) and hot earth (e.g. earth of the big smoothing capacitor C2505).
3. Connect a oscilloscope to test point P4 at pin 3 IC7520.
4. Turn up the external DC supply voltage slowly to 17V DC.

Remark: *The IC starts at a supply voltage of 14V DC, after that the supply voltage can drop to approx. 9V DC. At approximately 18V DC, over voltage protection becomes active, resulting in a supply voltage drop below 7V DC before a new start-up is performed by turning up the supply voltage above 14V DC.*

5. The correct (measured) situation is displayed in . Other results indicate a defect in the power supply control part (IC7520 or peripheral components at pins 10 or 11).

Figure 6.2:
5V/div; 5uS/div
→ 40KHz pulse



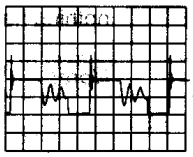
Energy transfer of the power supply (only if control part is OK)
6. Apply action 1, 2 and 4 as described earlier.
7. Connect a lamp of 230V/100W across the VOS output capacitor C2569.
8. Connect a 1kΩ resistor between the +5STANDBY (connector 7L10) and the STANDBY line (connector 8L10) to switch the power supply to normal operation.
9. Connect the mains connector to a VARIAC but leave it at 0.
10. Connect a voltmeter across C2569 and an oscilloscope between the drain of TS7541 (25 & 29") or TS7540 (21") and hot earth.
11. Slowly increase the mains input voltage by the VARIAC (in this way further damage to the power supply can be avoided).

Protections, Faultfinding and Repair tips

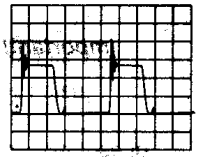
The wave forms for the following mains voltage are given:

Mains in voltage
10V AC: 20kHz and VOS 7V5
20V AC: 40kHz and VOS 30V
40V AC: 40kHz and VOS 80V
65V AC: 40kHz and VOS 140V
> 65V AC: Stable situation, so 40kHz and 140V
In case of a feedback problem, the situation will not stabilise or the voltage will exceed 140V (95V with 21")

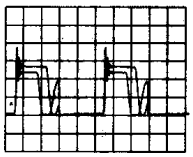
1. Figure 6.3:
   Mains in 10V AC
   10V/div; 10us/div



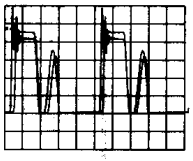
2. Figure 6.4:
   Mains in 20V AC
   20V/div; 5uS/div
   → 40kHz pulse
   → VOS 30V



3. Figure 6.5:
   Mains in 40V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 80V



4. Figure 6.6:
   Mains in 65V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 140V



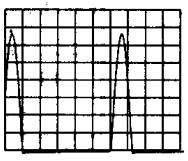
6.5.3 Fault finding of the horizontal circuitry

When the horizontal circuitry itself is defective, it can be simplified to a stand alone "switched mode supply" at low voltages (low risk) as follows:

1. Disconnect the set from mains.
2. Disconnect the SSP by removing all cables to the SSP.
3. Connect an external 50V DC (or 40V DC) supply with current measurement possibility across C2400.
4. Replace the HDRIVE by an external LF generator (TTL level (between 0 and 5V); duty cycle 50%) with a 16 kHz pulse at the base of TS7410 (near LOT at the side of the PCB).
5. Connect a oscilloscope to test point L1 (collector of line output transistor 7420).

Possibilities:

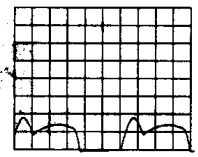
1. Figure 6.7:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx. 100mA



Observation: *normal 16kHz pulses and 100mA supply current*

Correct horizontal circuitry
Note that the amplitude of the signal strongly depends on the frequency of the generator.

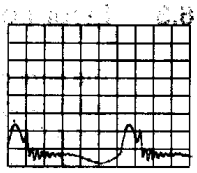
2. Figure 6.8:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div



   Line deflection open:
   Current from external DC supply is approximately 100mA.

Observation: *small pulse followed by wide pulse and 100mA supply current*
Causes: *horizontal deflection coil open*
linearity coil L5421 open
S-correction C2427 open

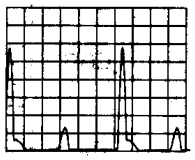
3. Figure 6.9:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx 500mA !!



Observation: *fast oscillations and 500mA supply current*
Cause: *horizontal deflection shorted (e.g. line deflection coil shorted)*

When the line deflection is not completely shorted but only a number of windings are shorted, the wave form does not show the oscillation and the current of the external DC supply is approximately 200mA.

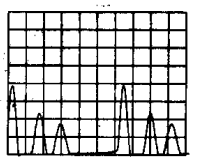
4. Figure 6.10:
   L3; test point at collector line output transistor (7420)
   100V/div; 10µS/div



   Current from external DC supply is approximately 150mA

Observation: *flyback time is shorter, one extra pulse in between, 150mA supply current*
Cause: *flyback capacitor C2425 open*

5. Figure 6.11:
   L3; test point at collector line output transistor (7420)
   100V/div; 10µS/div



   Current from external DC supply > 1A

Observation: *2 pulses per cycle extra and supply current from more than 1A*
Cause: *short-circuit in picture tube (e.g. EHT to Aquadag)*

6.5.4 Fault finding "no picture, no protection" (problem in the video controller IC part TDA8366-4C)

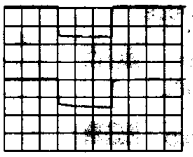
When there is no picture and no protection, it is most likely that there is a problem with the BC_INFO caused by the TDA8366, the RGB amplifiers or the picture tube.

For measuring, connect a video generator (e.g. PM5518) at the aerial input with a white pattern to the tuner. Trigger the oscilloscope field frequent. A stable picture is obtained if triggered with VDRIVE+ at pin 4 S11.

Normal start up procedure

1. First phase of start up; 4 white measuring lines (lines 15, 16, 17, 18) and the main picture is muted (wave forms are better visible if the picture tube is cold);

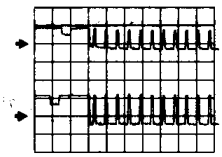
   Figure 6.12:
   Red (pin 8 of connector R43 on the CRT panel) and green gun (pin 6)
   100V/div DC;
   100µs/div

   The total beam current is measured and fed back to pin 16 TDA8366 (IC7119)
   The TDA8366 checks the voltage at pin 16 of the TDA8366 during these lines
   < 4.5V : set remains in this phase
   ≥ 4.5V : set continues with start up phase 2

2. Second phase of start up; each beam is separately measured and the main picture is still muted. Line 15 is Red, line 16 is Green and line 17 is Blue. BC_INFO is measured.
   - differences between the lines (guns) are compensated
   - when the differences are minimal the set continues with phase 3, otherwise it remains in **phase 2**

   Figure 6.13:
   Red (lower line) (pin 8 of connector R43 on the CRT panel) and green (upper line) gun (pin 6)
   50V/div AC;
   100µs/div

3. After start up the picture is present and differences in cut-off points of the R, the G and the B gun are compensated continuously.

Repair procedure

Typical situation: no picture and no error codes
- Switch the set on.
- In a 4:3 set, press "picture size" to switch the set to "16:9 compressed" mode.
- In a 16:9 set, shift down the picture with the cursor keys.

The start up phase of the set can be identified:

1. **A bright white horizontal line at the top; the rest of the picture is dark**
   (set hangs in first phase of start up procedure)
   Oscilloscope picture of the voltage over the guns looks like figure 6.12.

   TDA8366 (IC7119), picture tube and RGB amplifiers are OK

   There should be 4.5V at pin 16 TDA8366.

   Possible problem: if there is no 4.5V present at pin 16 of TDA8366, there is a defect (in one or more of the components) in the BC_INFO feedback loop.

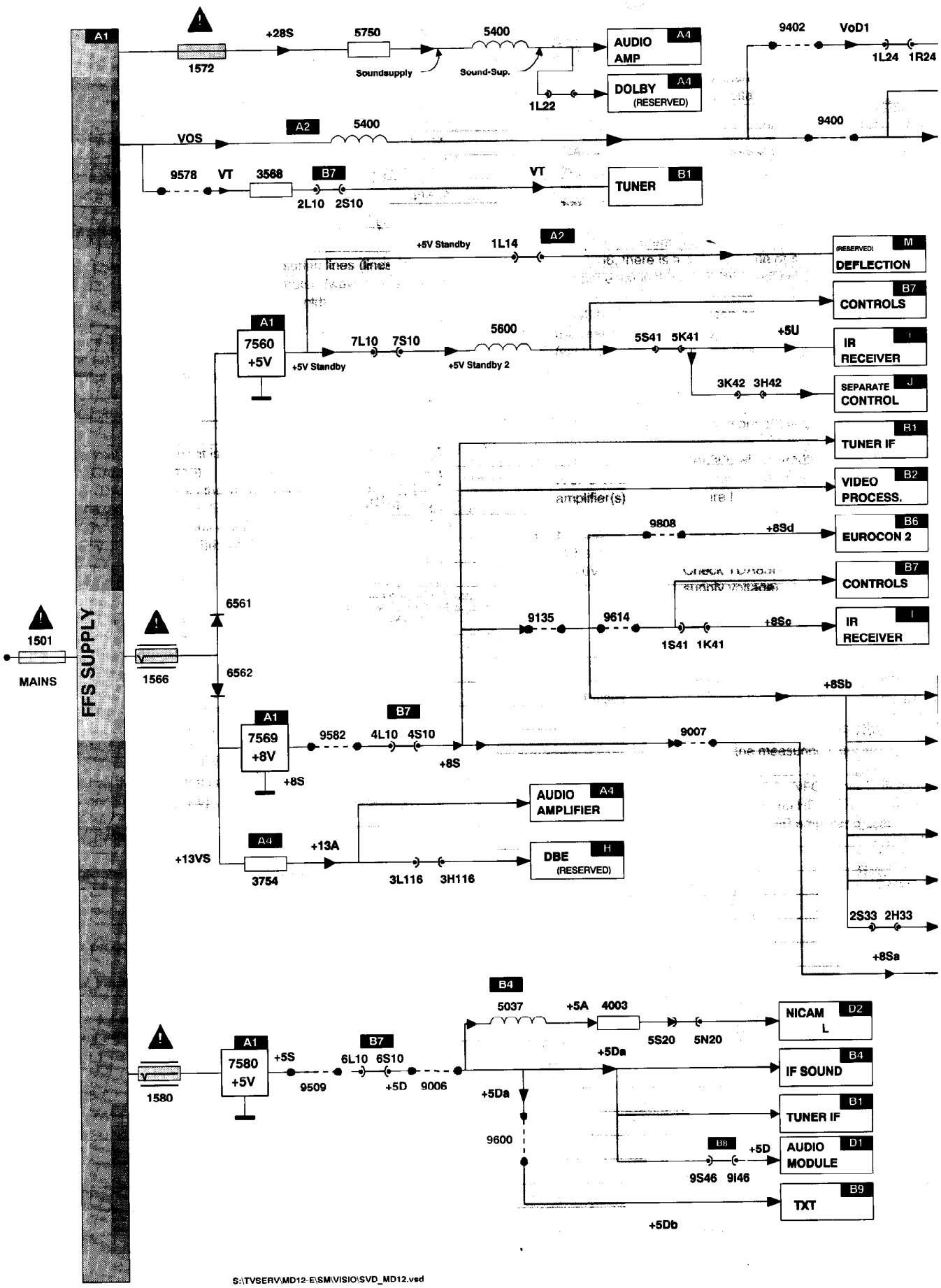
2. **Small horizontal red, green and blue lines at the top; the rest of the picture is dark**
   (set hangs in second phase of start up procedure)

   TDA8366 is OK

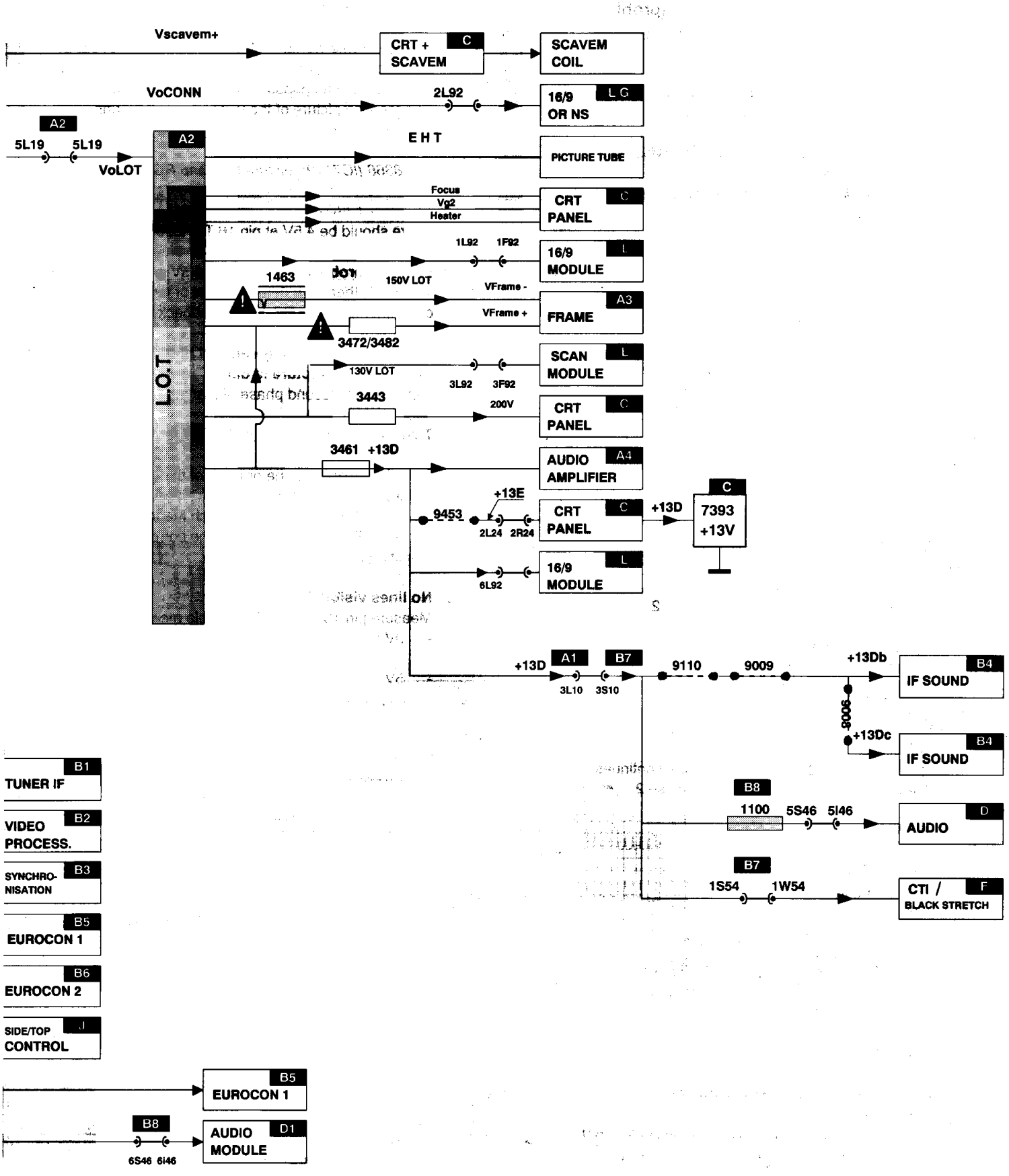
   Possible problem: one or more of the guns of the picture tube are bad
   Measure at pin 16 TDA8366 which feedback line(s) (the R or G or B line) is/are smaller; the corresponding amplifier(s) or gun(s) is/are faulty.

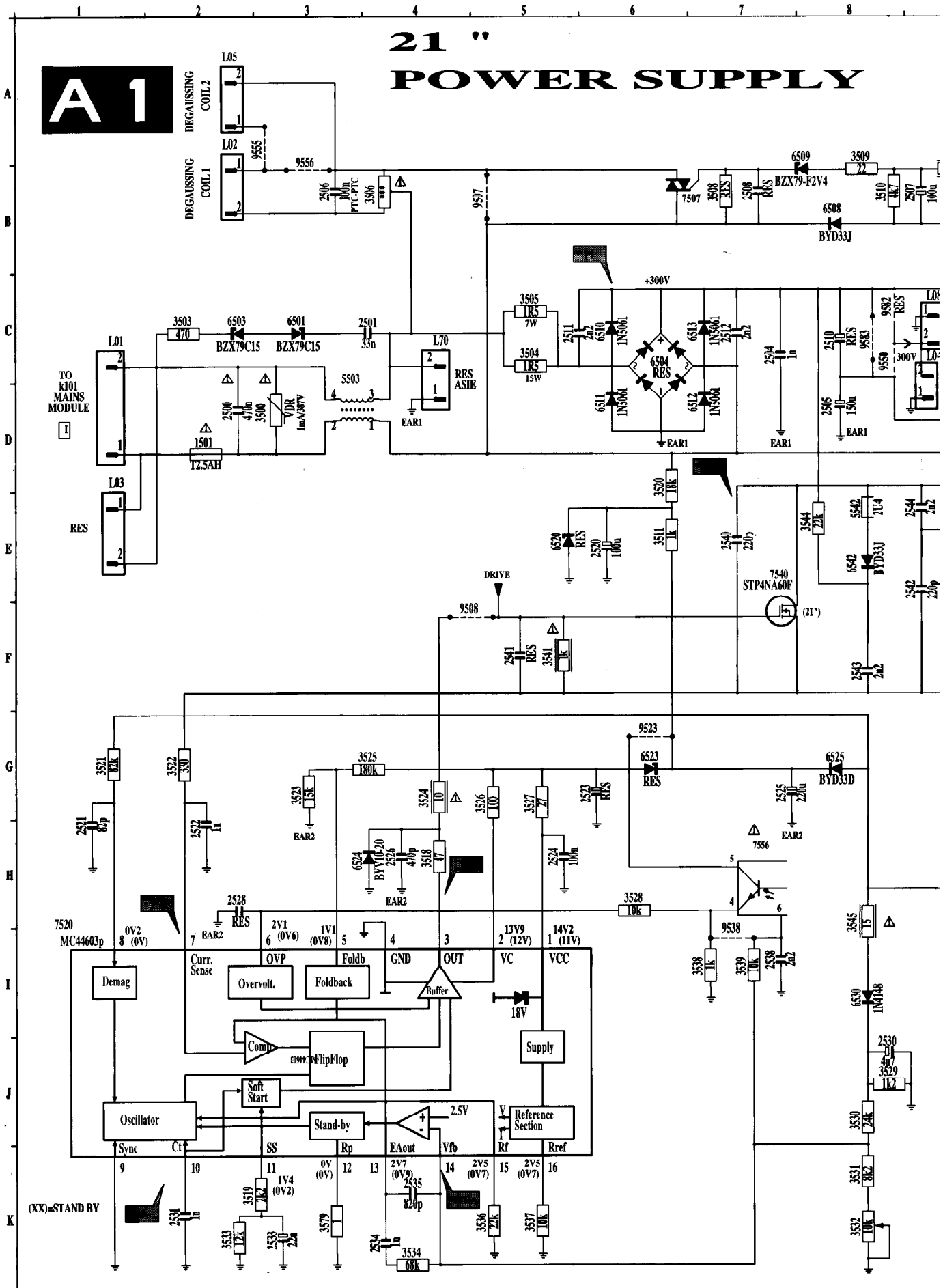
3. **No lines visible (picture dark)**
   Measure pin 16 TDA8366; possible measurements:
   - 0V : Check TDA8366 (sandcastle and the supply voltage)
   - 5V : Check RGB amplifiers
     Short pin 16 TDA8366 to ground, now there will be measuring lines (at continuously 5V, phase 1 and 2 is bypassed)
   - Pulses : there is a measuring line, so the TDA8366 is OK
     Measure on cathode on the CRT panel if the measuring lines are present:
     Yes → BC_INFO circuit is open or no HEATER voltage
     No → RGB amplifier problem

7. Supply voltage diagram /

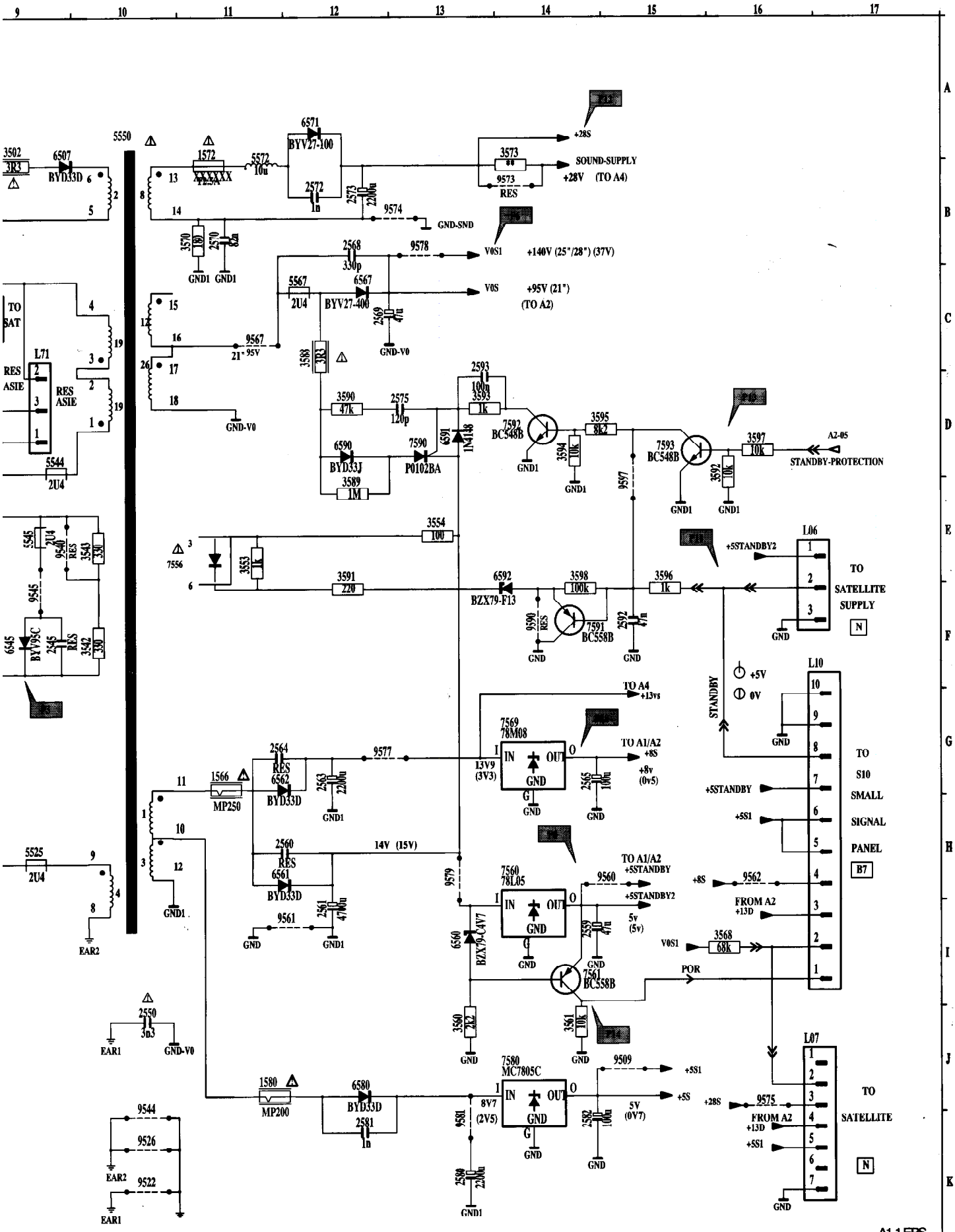


Speisespannung Schaltplan / Diagramme de tension d'alimentation




A 1
21 "
POWER SUPPLY
DEGAUSSING COIL 2
DEGAUSSING COIL 1
TO k101 MAINS MODULE
RES
RES ASIE
DRIVE
+300V
300V
EAR1
EAR2
BZX79C15
BZX79C15
BZX79-F2V4
BYD33J
BYD33D
BYV10-20
1N5061
1N4148
STP4NA60F
(21")
MC44603p
Curr. Sense
OVP
Foldb
GND
OUT
VC
VCC
Demag
Overvolt.
Foldback
Buffer
Comp
FlipFlop
Supply
18V
Soft Start
Oscillator
Stand-by
2.5V
Reference Section
Sync
Ct
SS
Rp
EAout
Vfb
Rf
Rref
(XX)=STAND BY

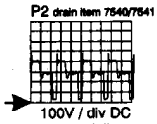
Alimentation 21"



1501 D2
1502 G11
1572 A11
1580 J11
2500 D2
2501 C4
2504 C7
2505 D8
2506 B3
2507 B9
2508 B7
2510 C8
2511 C5
2513 C7
2516 E6
2521 H4
2522 H2
2523 G6
2524 H5
2525 G7
2526 H4
2528 H2
2530 J8
2531 K2
2533 K3
2534 K4
2535 K4
2538 L7
2540 E7
2541 E5
2542 E10
2543 F8
2544 E9
2545 F9
2550 J10
2559 H4
2560 H12
2561 I12
2563 G12
2564 G11
2565 G14
2568 B12
2569 B12
2570 B11
2574 B12
2575 D13
2580 K13
2581 K12
2582 K14
2592 F15
2593 C13
3500 D3
3502 A9
3503 C2
3504 C5
3505 C3
3506 B4
3508 B7
3509 A8
3510 B8
3511 E6
3518 H4
3519 K2
3520 D6
3521 G1
3522 G2
3525 G5
3526 G4
3527 G4
3528 H6
3529 I8
3530 I8
3531 K8
3532 K8
3533 K2
3534 K4
3536 K5
3537 K5
3538 I7
3541 E5
3542 E10
3543 E10
3544 F8
3545 H8
3553 F11
3554 E13
3560 J13
3561 J14
3568 I16
3570 B11
3573 A14
3576 K3
3588 C12
3589 E17
3590 D17
3591 E17
3592 E16
3593 D16
3594 D13
3595 D14
3596 D15
3597 E15
3598 D16
3599 E14
5503 C3
5525 H9
5542 F8
5544 D9
5545 F6
5550 A10
5557 C12
5572 B11
6501 C3
6503 C2
6504 C6
6507 A9
6508 B8
6509 A8
6510 C6
6511 D6
6512 D7
6513 C7
6520 K5
6521 G6
6522 H3
6524 H3
6525 G8
6530 I8
6542 E8
6545 F9
6560 H3
6561 H11
6562 G11
6564 G14
6570 C12
6571 A12
6580 D12
6590 D12
6591 D12
6593 E14
6594 B12
7507 B6
7520 H1
7540 K7
7556 H7
7556 E10
7560 H14
7561 I14
7569 G14
7580 J14
7590 D13
7591 E15
7592 D14
7593 D15
9507 B5
9508 C4
9509 D5
9522 K10
9523 G6
9526 K10
9538 I7
9540 E9
9544 J10
9545 F9
9550 C8
9555 A3
9556 A3
9560 H15
9561 H7
9564 H16
9567 C11
9573 B14
9574 B13
9575 J16
9577 G12
9578 B13
9579 H13
9581 K13
9583 C8
9585 C8
9590 E14
9597 E15
L01 C7
L02 B7
L03 D1
L04 D9
L05 A2
L06 E16
L07 J16
L08 C9
L10 E16
L70 C4
L71 C9

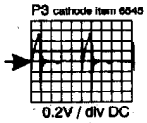
P1 pin 4 item 5550
300VDC

P2 drain item 7540/7541



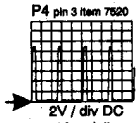
100V / div DC
10µs / div

P3 cathode item 6545



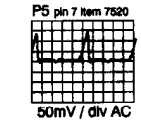
0.2V / div DC
5µs / div

P4 pin 3 item 7520



2V / div DC
10µs / div

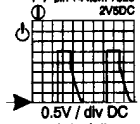
P5 pin 7 item 7520



50mV / div AC
10µs / div

P6 VOS
non 21": 140V DC
21": 95V DC

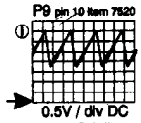
P7 pin 14 item 7520
2V5DC



0.5V / div DC
0.1s / div

P8 +5VSTANDBY
5VDC
0VDC

P9 pin 10 item 7520



0.5V / div DC
10µS / div

P10 +8S
8VDC
0VDC

P11 STANDBY
5VDC
0VDC

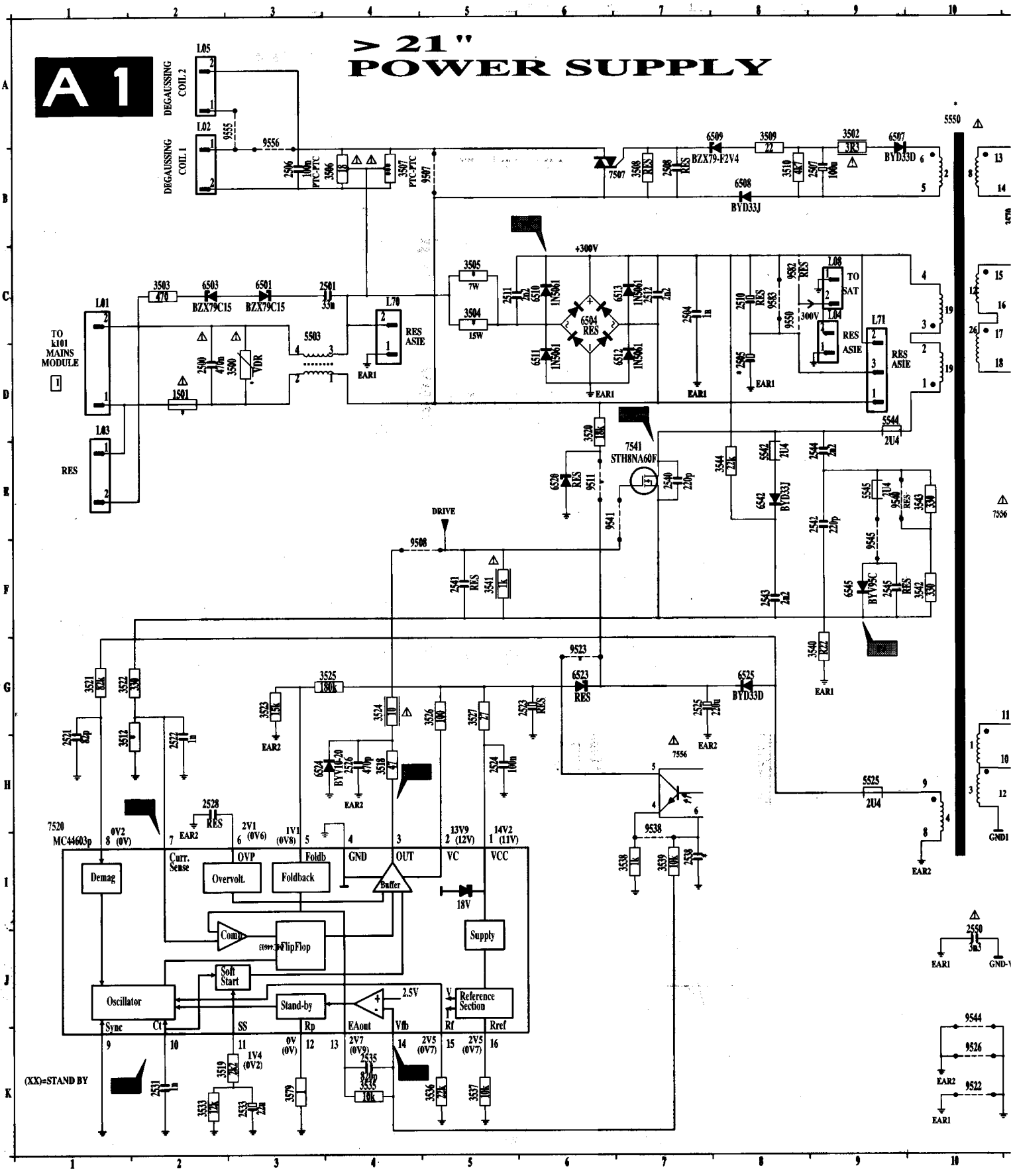
P12 +28S/
SOUND-SUPPLY
+28VDC

P13
/PROTECTION
0VDC = not in protection

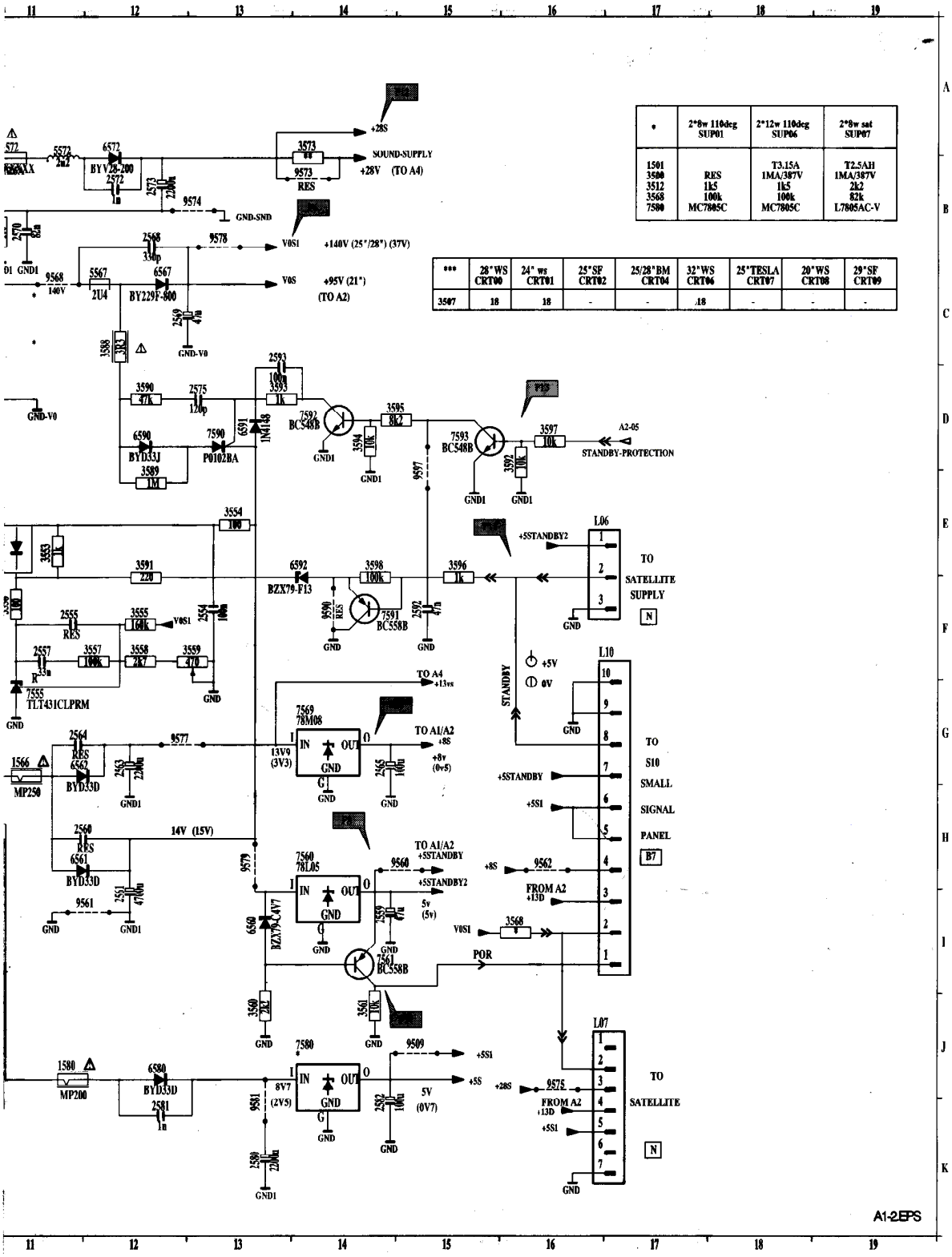
P14
POR (to)
0V 5V
POR (to)
5V 0V

OSC A1.CDR

Power supply > 21" / Speisung > 21" /



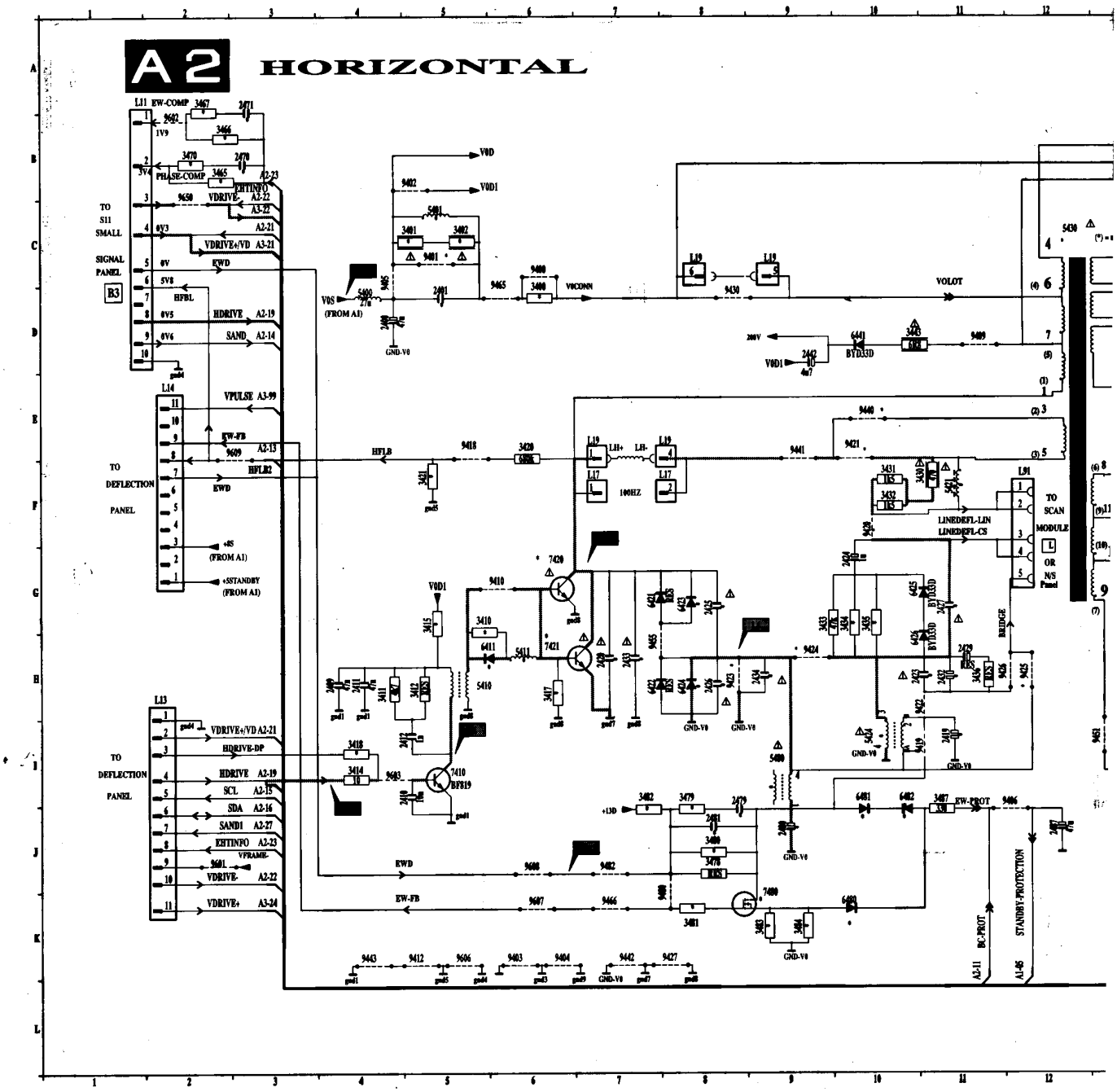
Alimentation > 21"

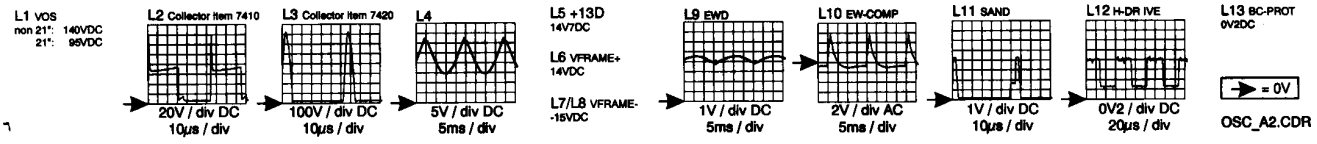


*	2*8w 110deg SUP01	2*12w 110deg SUP06	2*8w sat SUP07
1501		T3.15A	T2.5AH
3500	RES	1MA/387V	1MA/387V
3512	1K5	1k5	2k2
3568	100k	100k	82k
7500	MC7805C	MC7805C	L7805AC-V

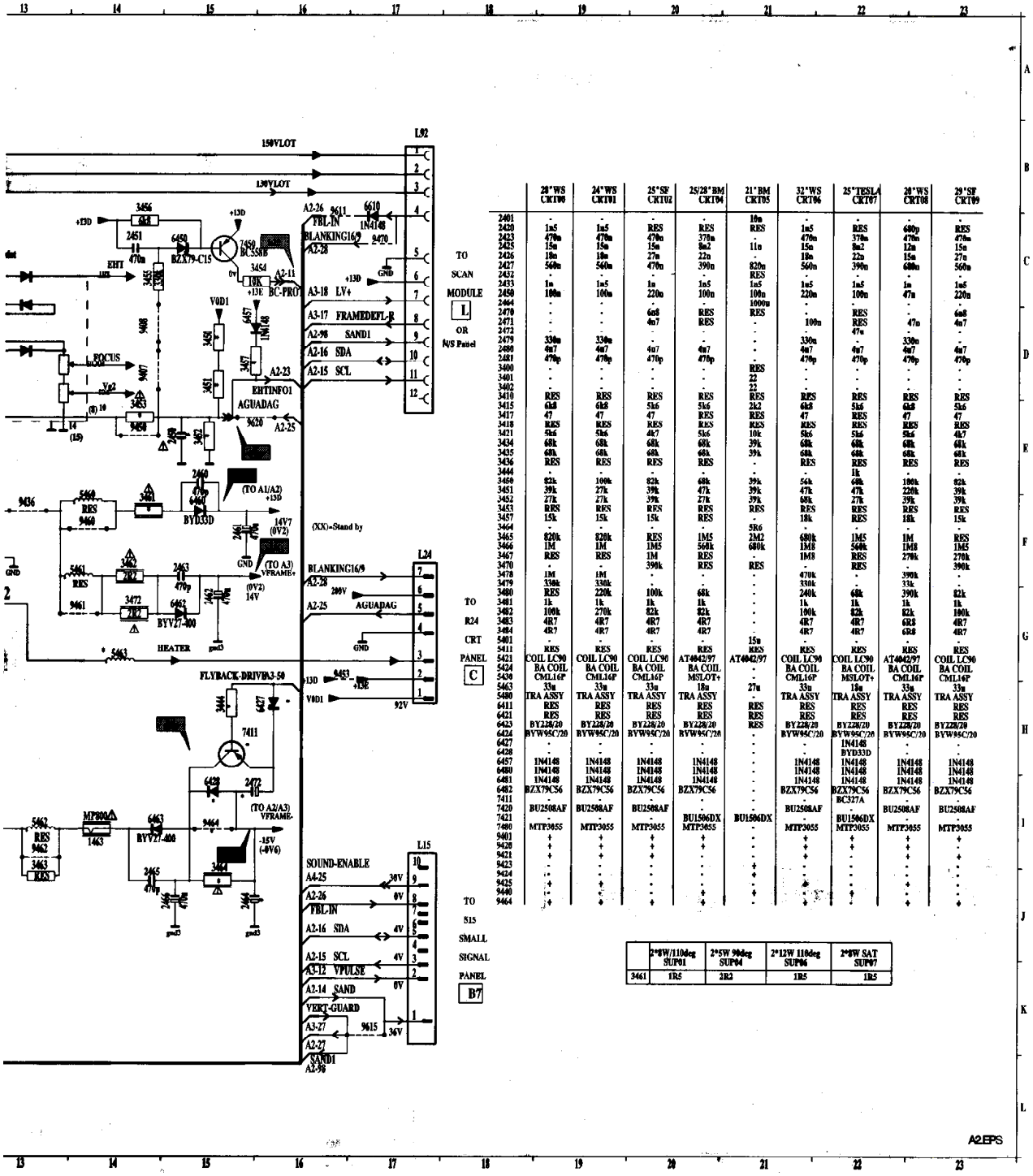
***	28"WS CRT00	24" ws CRT01	25"SF CRT02	25/28"BM CRT04	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
3507	18	18	-	-	18	-	-	-

Horizontal output / Horizontalausgang /





Sortie horizontale

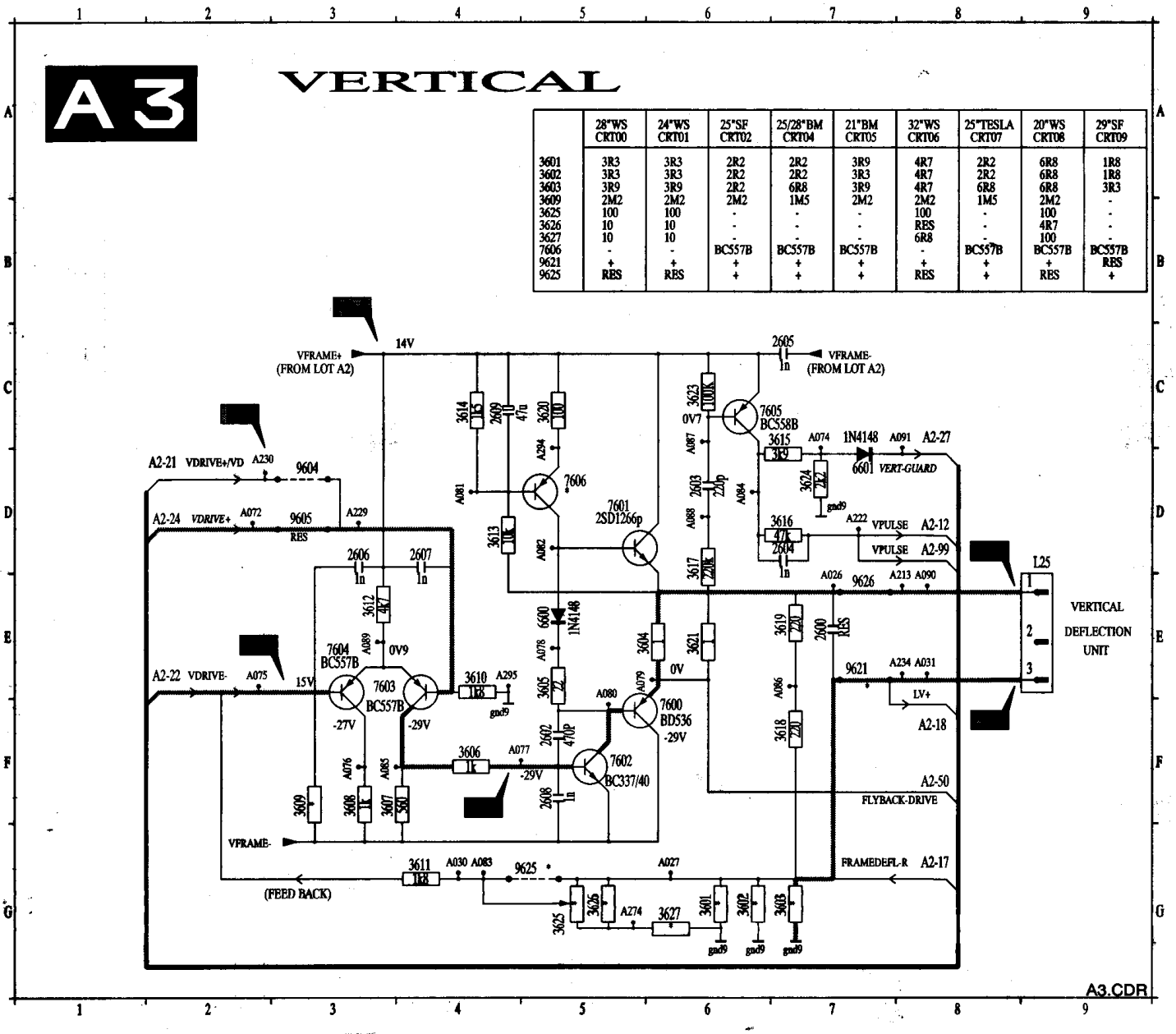


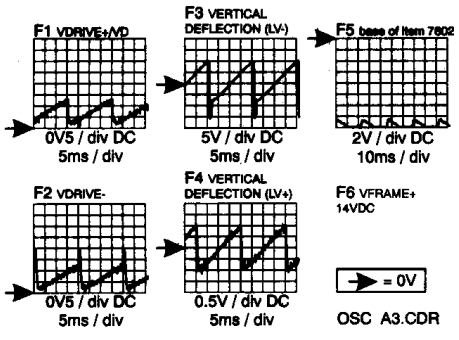
	28"WS CRT00	24"WS CRT01	25"SF CRT02	25/28"BM CRT04	21"BM CRT05	32"WS CRT06	25"TESLA CRT07	28"WS CRT08	29"SF CRT09
2401	-	-	-	-	10n	-	-	-	-
2420	1n5	1n5	RES	RES	RES	1n5	RES	680p	RES
2423	470n	470n	470n	370n	-	470n	370n	470n	470n
2425	15n	15n	15n	8n2	11n	15n	8n2	12n	15n
2426	18n	18n	27n	22n	-	18n	22n	15n	27n
2427	560n	560n	470n	390n	820n	560n	390n	680n	560n
2432	-	-	-	-	RES	-	-	-	-
2433	1n	1n5	1n	1n5	1n5	1n5	1n5	1n	1n5
2450	100n	100n	220n	100n	100n	220n	100n	47n	220n
2464	-	-	-	-	1000n	-	-	-	-
2470	-	-	6n8	RES	RES	-	RES	-	6n8
2471	-	-	4n7	RES	-	100n	RES	47n	4n7
2472	-	-	-	-	-	-	47n	-	-
2479	330n	330n	-	-	-	330n	-	330n	-
2480	4n7	4n7	4n7	4n7	-	4n7	4n7	4n7	4n7
2481	470p	470p	470p	470p	-	470p	470p	470p	470p
3400	-	-	-	-	RES	-	-	-	-
3401	-	-	-	-	22	-	-	-	-
3402	-	-	-	-	22	-	-	-	-
3410	RES	RES	RES	RES	RES	RES	RES	RES	RES
3415	6k8	6k8	5k6	5k6	2k2	6k8	5k6	6k8	5k6
3417	47	47	47	RES	RES	47	RES	47	47
3418	RES	RES	RES	RES	RES	RES	RES	RES	RES
3421	5k6	5k6	4k7	5k6	10k	5k6	5k6	5k6	4k7
3434	68k	68k	68k	68k	39k	68k	68k	68k	68k
3435	68k	68k	68k	68k	39k	68k	68k	68k	68k
3436	RES	RES	RES	RES	-	RES	RES	RES	RES
3444	-	-	-	-	-	-	1k	-	-
3450	82k	100k	82k	68k	39k	56k	68k	100k	82k
3451	39k	27k	39k	47k	39k	47k	47k	220k	39k
3452	27k	27k	39k	27k	39k	68k	27k	39k	39k
3453	RES	RES	RES	RES	RES	RES	RES	RES	RES
3457	15k	15k	15k	RES	-	18k	RES	18k	15k
3464	-	-	-	-	5R6	-	-	-	-
3465	820k	820k	RES	1M5	2M2	680k	1M5	1M	RES
3466	1M	1M	1M5	560k	680k	1M8	560k	1M8	1M5
3467	RES	RES	1M	RES	-	1M8	RES	270k	270k
3470	-	-	390k	RES	RES	-	RES	-	390k
3478	1M	1M	-	-	-	470k	-	390k	-
3479	330k	330k	-	-	-	330k	-	33k	-
3480	RES	220k	100k	68k	-	240k	68k	390k	82k
3481	1k	1k	1k	1k	-	1k	1k	1k	1k
3482	100k	270k	82k	82k	-	100k	82k	82k	100k
3483	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
3484	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
3401	-	-	-	-	15n	-	-	-	-
5411	RES	RES	RES	RES	RES	RES	RES	RES	RES
5421	COIL LC90	COIL LC90	COIL LC90	AT4042/97	AT4042/97	COIL LC90	COIL LC90	AT4042/97	COIL LC90
5424	BA COIL	BA COIL	BA COIL	BA COIL	-	BA COIL	BA COIL	BA COIL	BA COIL
5430	CML16P	CML16P	CML16P	MSLOT+	-	CML16P	MSLOT+	CML16P	CML16P
5463	33n	33n	33n	18n	27n	33n	18n	33n	33n
5480	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY	-	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY
6411	RES	RES	RES	RES	RES	RES	RES	RES	RES
6421	RES	RES	RES	RES	RES	RES	RES	RES	RES
6423	BY228/20	BY228/20	BY228/20	BY228/20	RES	BY228/20	BY228/20	BY228/20	BY228/20
6424	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20	-	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20
6427	-	-	-	-	-	-	1N4148	-	-
6428	-	-	-	-	-	-	BYD33D	-	-
6457	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6460	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6461	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6462	BZX79C56	BZX79C56	BZX79C56	BZX79C56	-	BZX79C56	BZX79C56	BZX79C56	BZX79C56
7411	-	-	-	-	-	-	BC327A	-	-
7420	BU2508AF	BU2508AF	BU2508AF	-	-	BU2508AF	-	BU2508AF	BU2508AF
7421	-	-	-	BU1506DX	BU1506DX	-	BU1506DX	-	-
7480	MTP3055	MTP3055	MTP3055	MTP3055	-	MTP3055	MTP3055	MTP3055	MTP3055
9401	+	+	+	+	-	+	+	+	+
9420	+	+	+	+	-	+	+	+	+
9421	+	+	+	-	-	+	+	+	+
9423	-	-	-	-	+	-	-	-	-
9424	-	-	-	-	+	-	-	-	-
9425	+	+	-	-	+	+	+	-	-
9440	-	-	-	-	+	-	-	-	-
9464	+	+	+	+	-	+	-	+	+

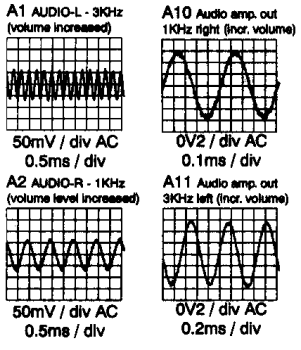
	2*8W/110deg SUP01	2*5W 90deg SUP04	2*12W 110deg SUP06	2*8W SAT SUP07
3461	1R5	2R2	1R5	1R5

Vertical output / Vertikalausgang / Sortie verticale

2600 E7	2608 E5	3606 E4	3613 D4	3620 C5	6600 E5	7605 C6	A2-12 D8	A2-50 E8	A274 G5
2602 F5	2609 C4	3607 F3	3614 C4	3621 E6	6601 D7	7606 D5	A2-17 G8	A2-99 D8	A294 D5
2603 D6	3601 G6	3608 F4	3615 C7	3623 C6	7600 F6	9604 D3	A2-18 F8	A213 E8	A295 E4
2604 D7	3602 G6	3609 F3	3616 D7	3624 D7	7601 D5	9605 D3	A2-21 D2	A222 D7	L25 D9
2605 C7	3603 G7	3610 E4	3617 D6	3625 G5	7602 F5	9621 E7	A2-22 E2	A228 D3	
2606 D3	3604 E6	3611 G4	3618 E7	3626 G5	7603 E4	9625 G5	A2-24 D2	A230 D2	
2607 D4	3605 E5	3612 E3	3619 E7	3627 G6	7604 E3	9626 E7	A2-27 C8	A234 E8	

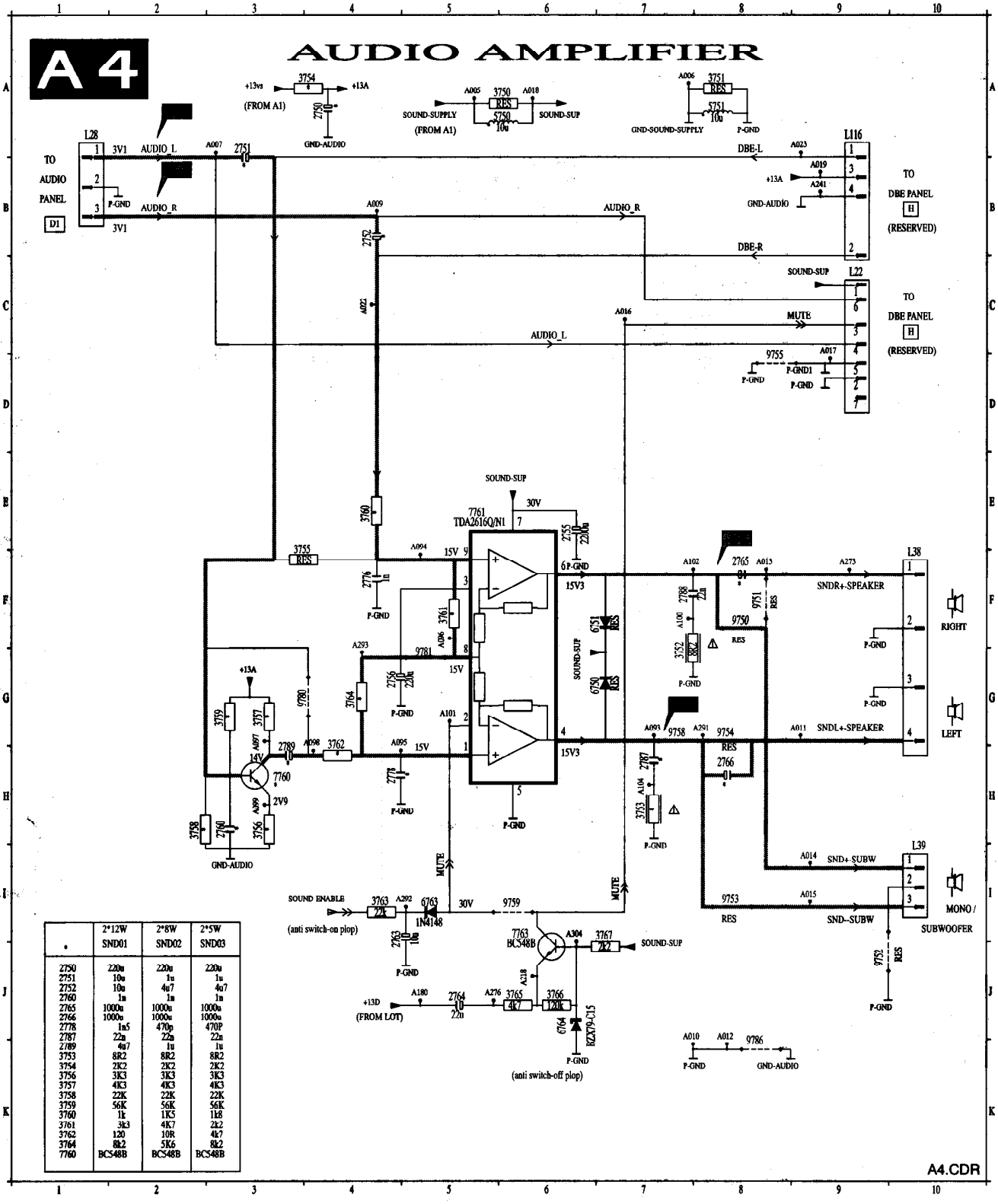




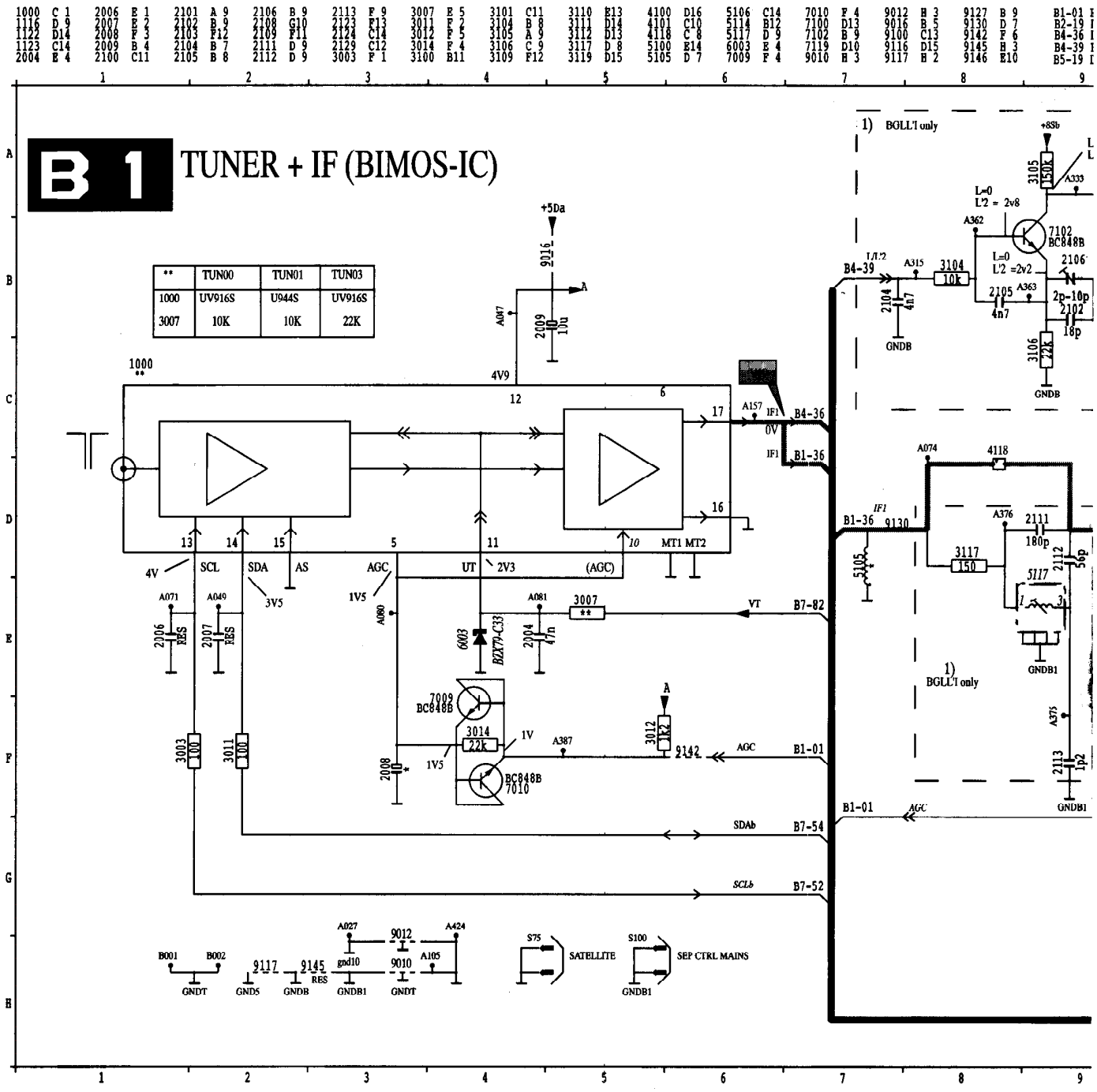

A1 AUDIO-L - 3KHz (volume increased)
50mV / div AC
0.5ms / div
A10 Audio amp. out 1KHz right (incr. volume)
0V2 / div AC
0.1ms / div
A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div
A11 Audio amp. out 3KHz left (incr. volume)
0V2 / div AC
0.2ms / div
OSC_A4.CDR

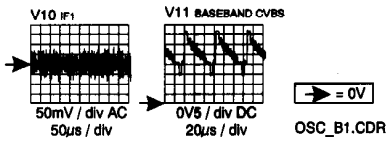
Audio amplifier / Ton Verstärker / Amplification audio

2750 A4 2751 A3 2752 B4 2755 E6 2756 G4 2760 H3 2763 I4 2764 I5 2765 F8 2766 H8 2770 F4 2778 H4 2787 H7 2788 F7 2789 H3 3750 A6 3751 A8 3752 G7 3753 H7 3754 A4 3755 F4 3756 H3 3757 G3 3758 H2 3759 G5 3760 E4 3761 E5 3762 H4 3763 I4 3764 G4 3765 I6 3766 I6 3767 I7 3780 A6 3781 A8 6750 G7 6751 F7 6763 I5 6764 I6 7760 H3 7761 F5 7763 I6 9750 F8 9751 F8 9752 I9 9753 I6 9754 G8 9755 D8 9758 G7 9759 I6 9780 G4 9781 G5 9786 I8 L116 A9 L22 C9 L28 A1 L38 F10 L39 I10

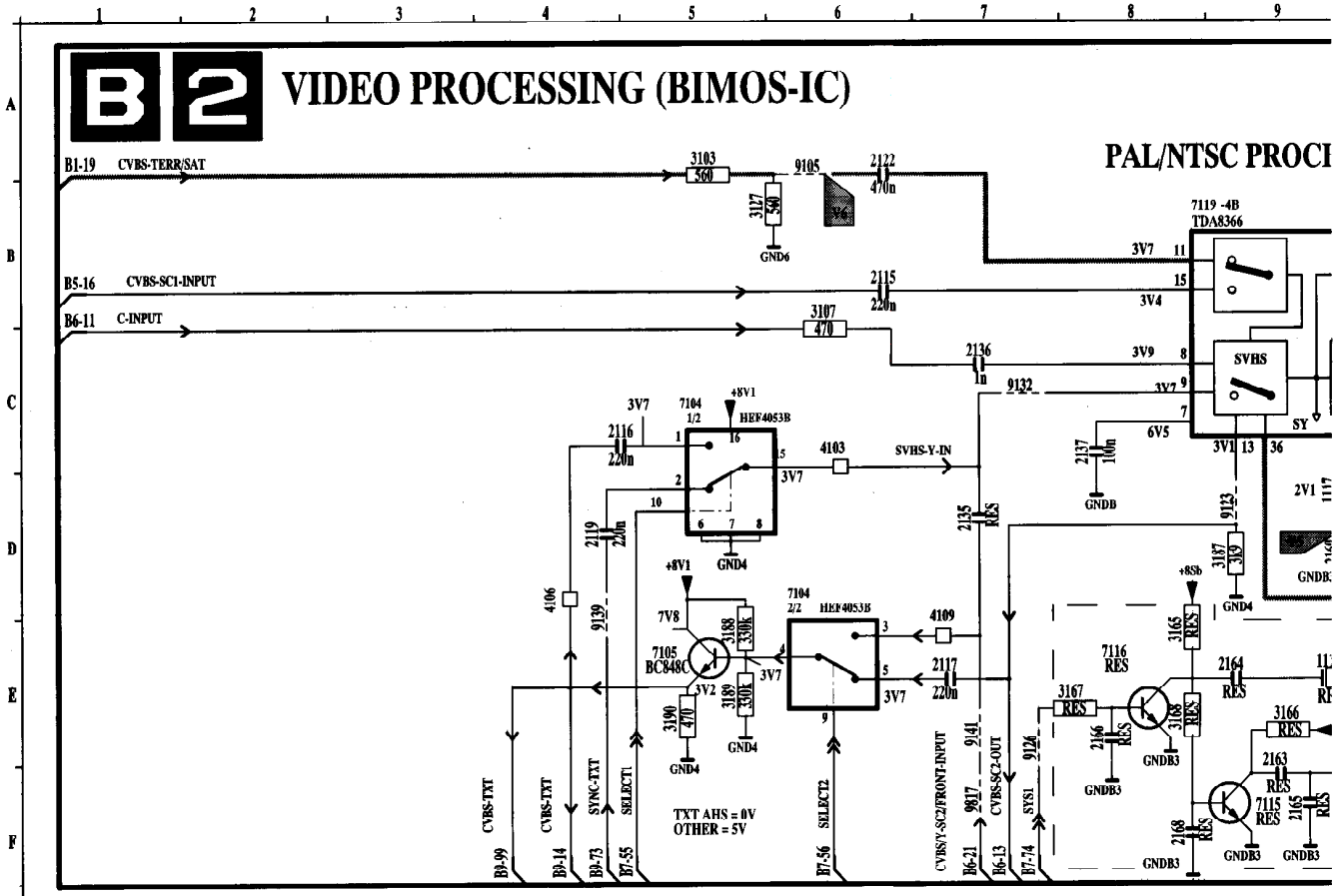


	2*12W SND01	2*8W SND02	2*5W SND03
2750	220u	220u	220u
2751	10u	1u	1u
2752	10u	4u7	4u7
2760	1n	1n	1n
2765	1000u	1000u	1000u
2766	1000u	1000u	1000u
2778	1n5	470p	470P
2787	22n	22n	22n
2789	4u7	1u	1u
3753	8R2	8R2	8R2
3754	2K2	2K2	2K2
3756	3K3	3K3	3K3
3757	4K3	4K3	4K3
3758	22K	22K	22K
3759	56K	56K	56K
3760	1k	1K5	1k8
3761	3k3	4K7	2k2
3762	120	10R	4k7
3764	8k2	5K6	8k2
7760	BC548B	BC548B	BC548B


B 1
TUNER + IF (BIMOS-IC)
1) BGLL'I only
+5Da
+8Sb
TUN00
TUN01
TUN03
1000 UV916S U944S UV916S
3007 10K 10K 22K
SCL
SDA
AS
AGC
UT
2V3
(AGC)
MT1 MT2
VT
B7-82
SDAb
B7-54
SCLb
B7-52
B1-01
B4-36
B1-36
GNDB
GNDB1
GNDT
GND5
SATELLITE
SEP CTRL MAINS
BC848B
BZX79-C33

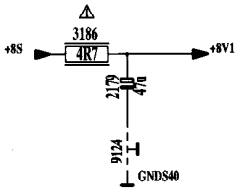

V10 IF1
50mV / div AC
50µs / div
V11 BASEBAND CVBS
0V5 / div DC
20µs / div
= 0V
OSC_B1.CDR

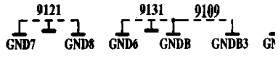
Video processing / Video Verarbeitung / Traitement video

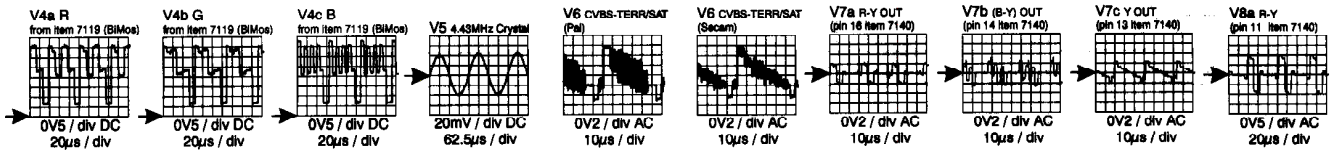


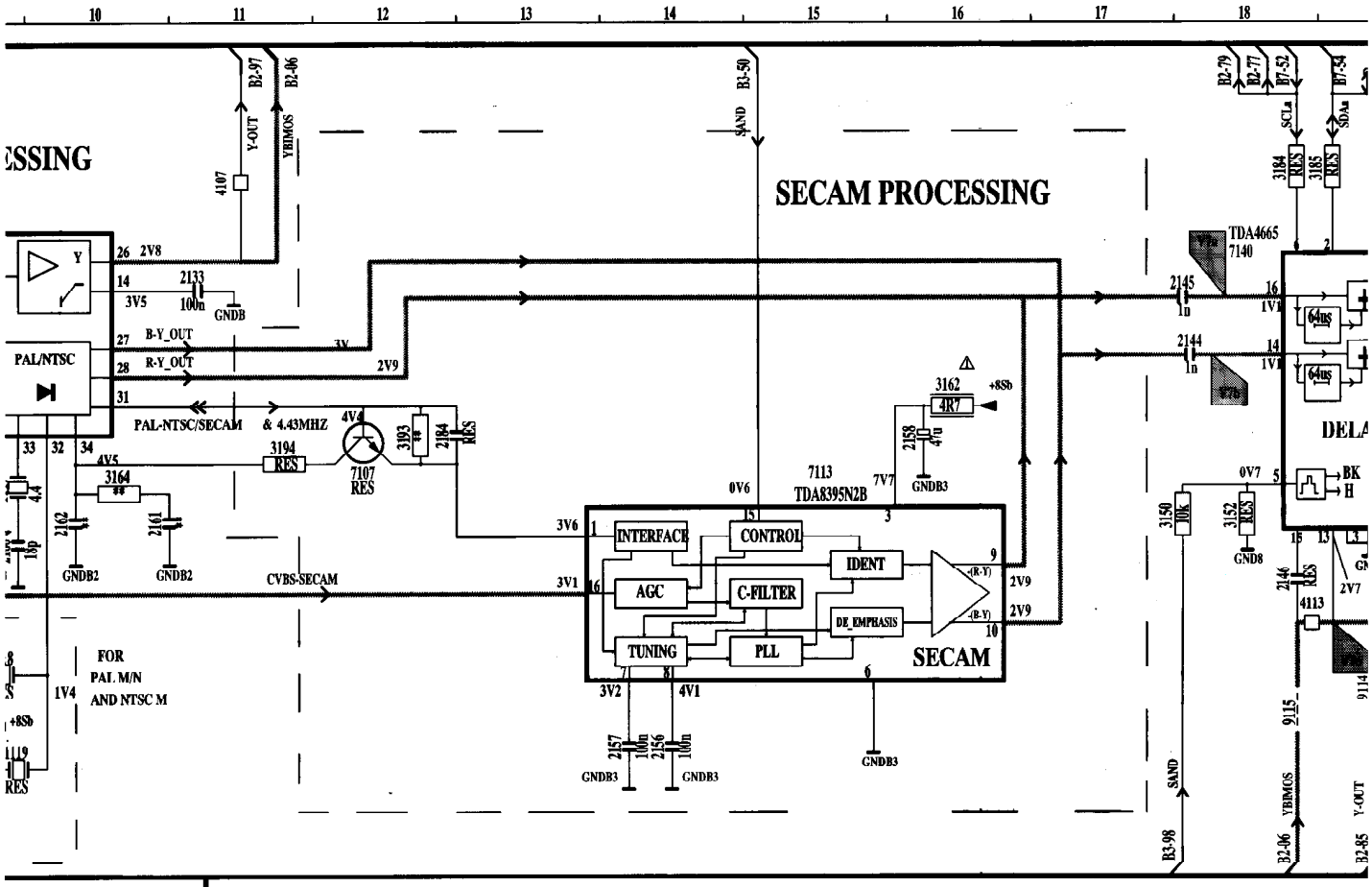
*	CTI/HIST PCT 00	BLKSTR PCT 01	NO CTI/BLK/HIST PCT 02	CTI/BLKSTR PCT 03	WS PCT 04
2180	220	-	-	220	-
2181	220	-	-	220	-
3195	-	-	1K	-	1K
3197	1k5	-	-	-	-
4102	+	+	-	+	+
4119	+	-	-	-	+
4197	-	+	-	+	-
9102	-	+	+	-	+
9103	-	+	+	-	+
9113	-	+	-	res	-

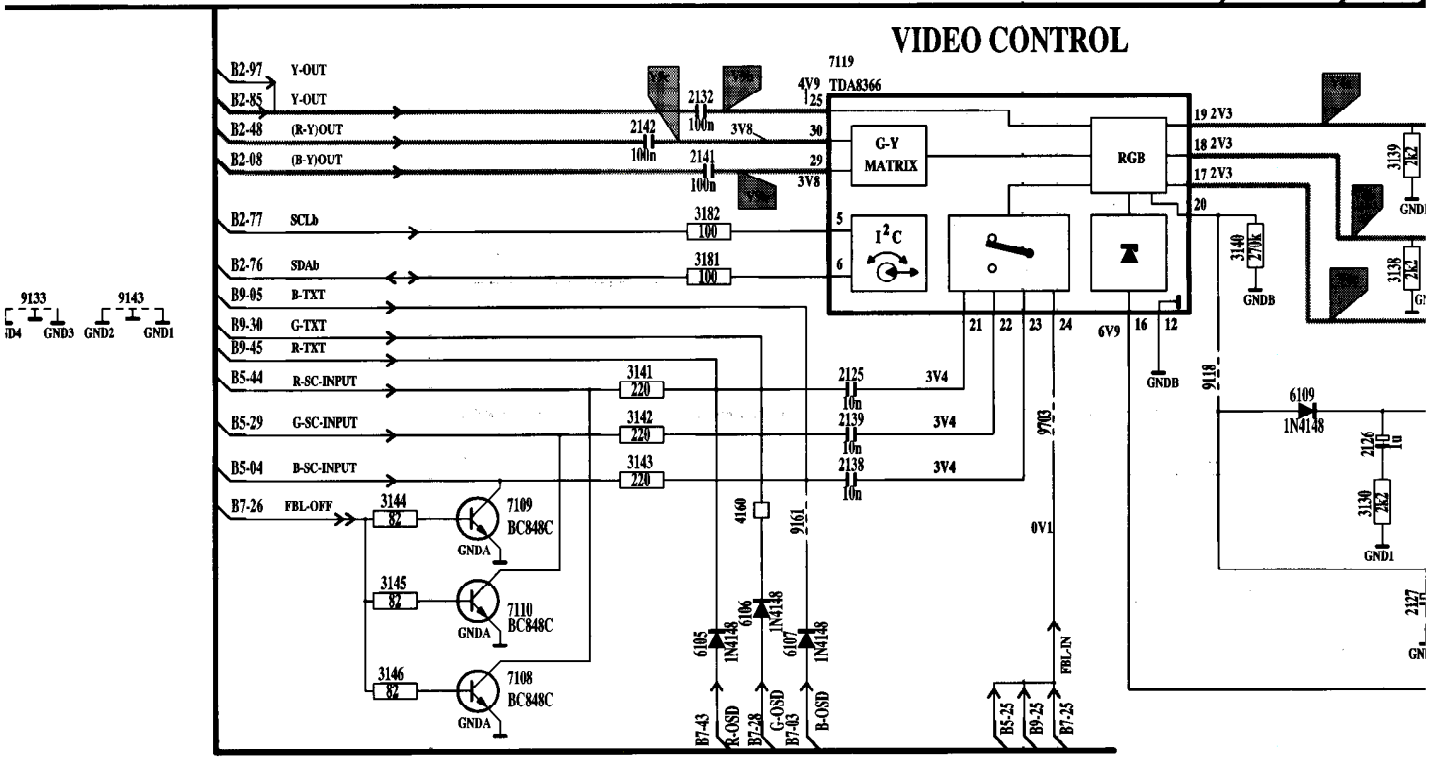
**	pal/secam STD00	pal STD02
2161	470n	100n
2162	4n7	3n9
3164	18k	100k
3193	jump	-

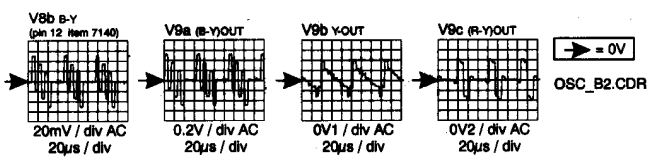


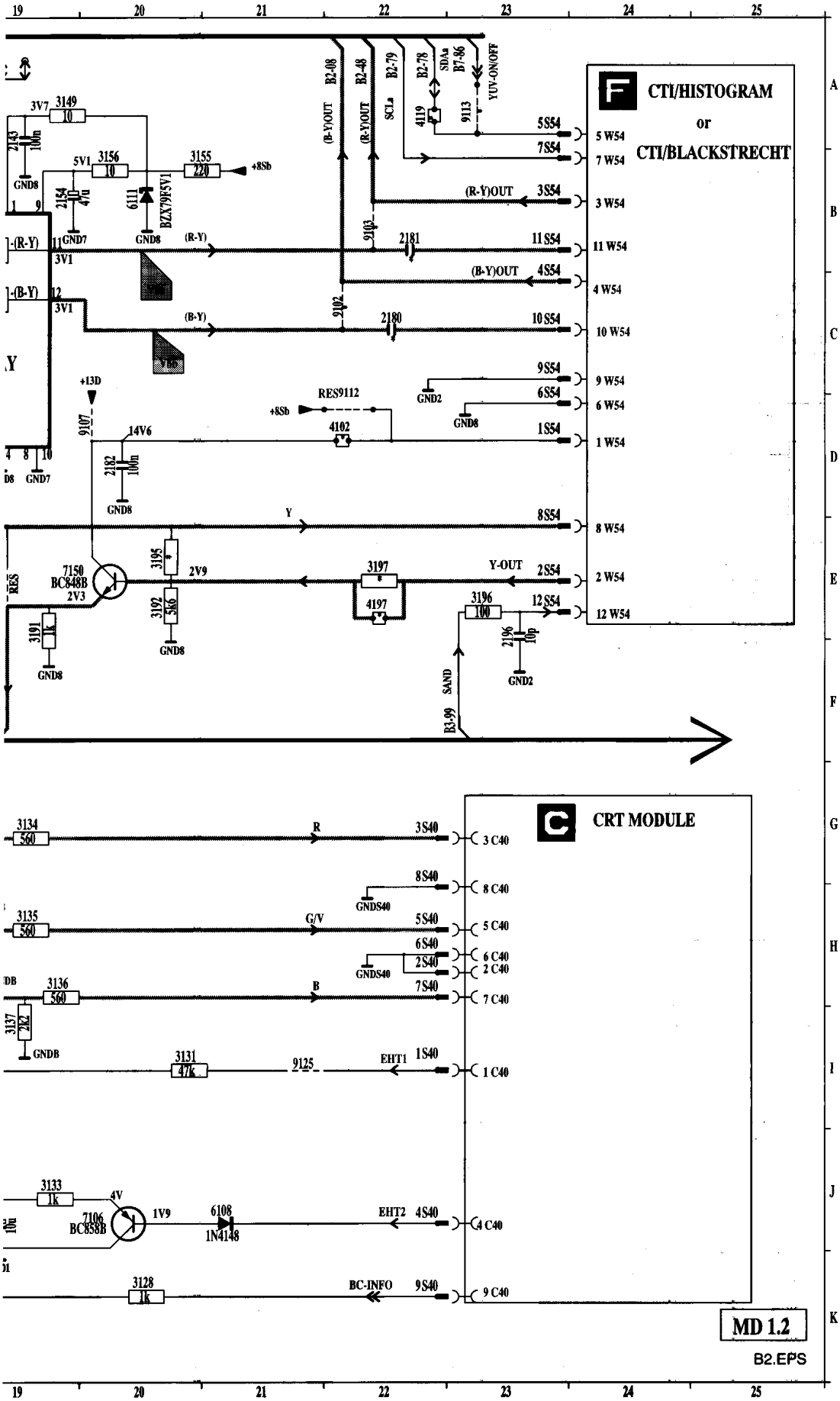



V4a R from item 7119 (BiMos) 0V5 / div DC 20µs / div
V4b G from item 7119 (BiMos) 0V5 / div DC 20µs / div
V4c B from item 7119 (BiMos) 0V5 / div DC 20µs / div
V5 4.43MHz Crystal 20mV / div DC 62.5µs / div
V6 CVBS-TERR/SAT (Pal) 0V2 / div AC 10µs / div
V6 CVBS-TERR/SAT (Secam) 0V2 / div AC 10µs / div
V7a R-Y OUT (pin 16 Item 7140) 0V2 / div AC 10µs / div
V7b (B-Y) OUT (pin 14 Item 7140) 0V2 / div AC 10µs / div
V7c Y OUT (pin 13 Item 7140) 0V2 / div AC 10µs / div
V8a R-Y (pin 11 Item 7140) 0V5 / div AC 20µs / div

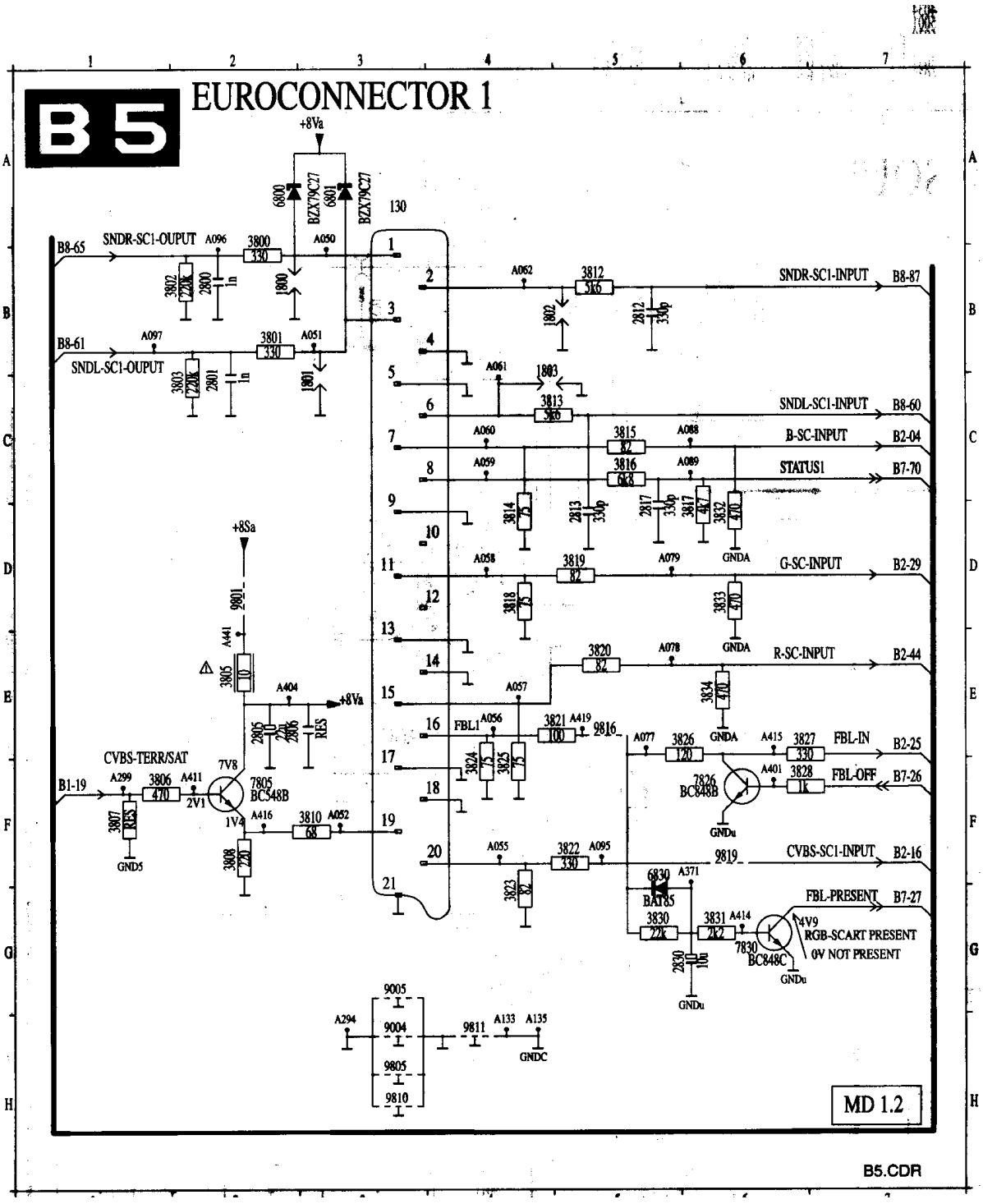

SECAM PROCESSING
TDA8395N2B
INTERFACE
CONTROL
IDENT
AGC
C-FILTER
DE_EMPHASIS
TUNING
PLL
SECAM
TDA4665
PAL/NTSC
PAL-NTSC/SECAM & 4.43MHZ
CVBS-SECAM
FOR PAL M/N AND NTSC M
B-Y_OUT
R-Y_OUT
Y-OUT
YBEMOS
SAND
SCLa
SDAa


VIDEO CONTROL
TDA8366
G-Y MATRIX
RGB
I²C
B2-97 Y-OUT
B2-85 Y-OUT
B2-48 (R-Y)OUT
B2-08 (B-Y)OUT
B2-77 SCLb
B2-76 SDAb
B9-05 B-TXT
B9-30 G-TXT
B9-45 R-TXT
B5-44 R-SC-INPUT
B5-29 G-SC-INPUT
B5-04 B-SC-INPUT
B7-26 FBL-OFF
BC848C
1N4148
FBL-IN
R-OSD
G-OSD
B-OSD

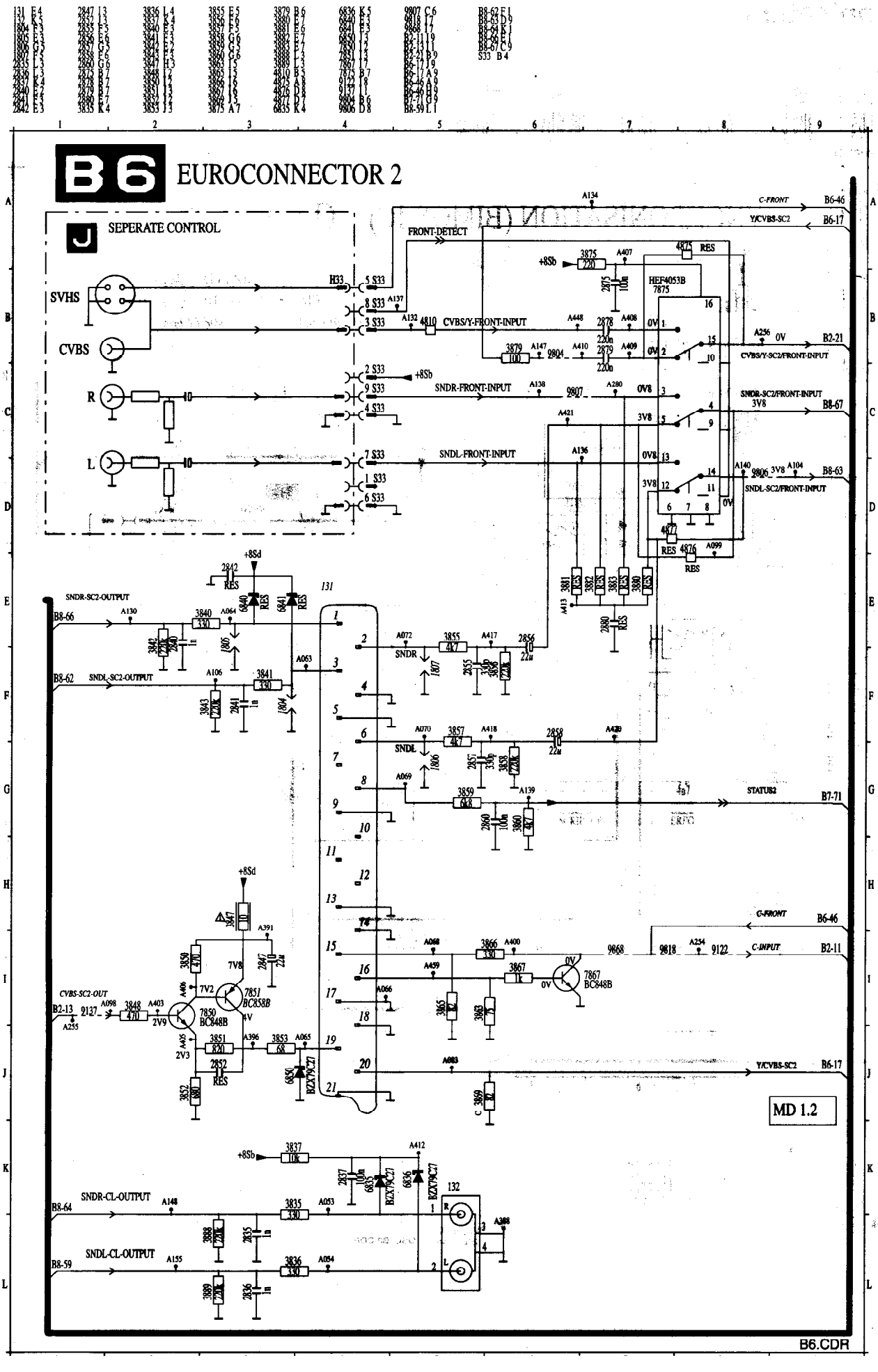

V8b B-Y (pin 12 item 7140)
20mV / div AC 20µs / div
V9a (B-Y)OUT
0.2V / div AC 20µs / div
V9b Y-OUT
0V1 / div AC 20µs / div
V9c (R-Y)OUT
0V2 / div AC 20µs / div
= 0V
OSC_B2.CDR


F
CTI/HISTOGRAM
or
CTI/BLACKSTRECHT
C
CRT MODULE
MD 1.2
B2.EPS
5S54
7S54
3S54
11S54
4S54
10S54
9S54
6S54
1S54
8S54
2S54
12S54
5 W54
7 W54
3 W54
11 W54
4 W54
10 W54
9 W54
6 W54
1 W54
8 W54
2 W54
12 W54
3 C40
8 C40
5 C40
6 C40
2 C40
7 C40
1 C40
4 C40
9 C40
(R-Y)OUT
(B-Y)OUT
Y-OUT
RES9112
BC848B
BC858B
1N4148
BZX79B5V1
EHT1
EHT2
BC-INFO
SAND
SDAa
SCLa
YUV-ON/OFF

Euroconnector 1 / Eurostecker 1 / Scart 1

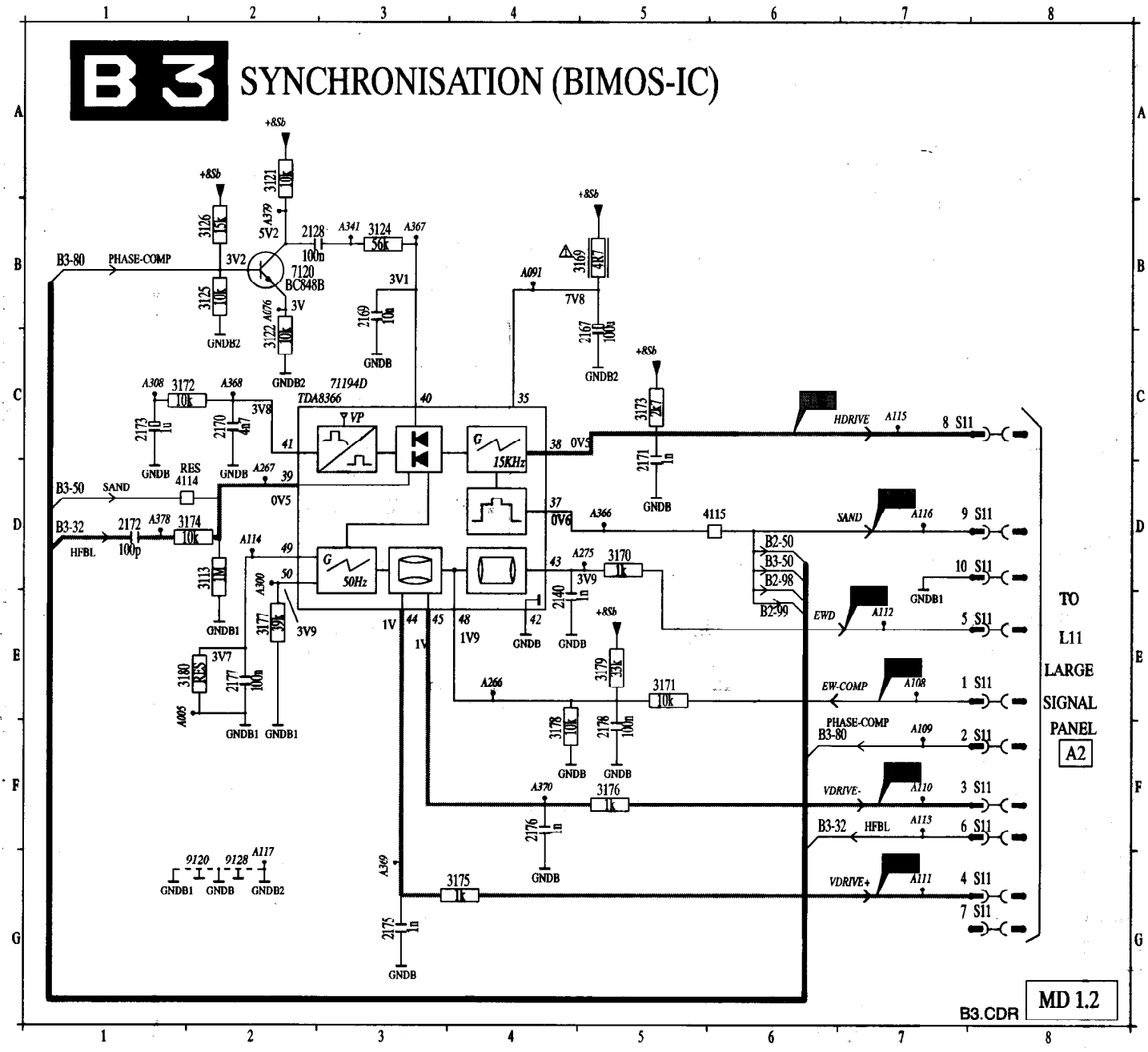


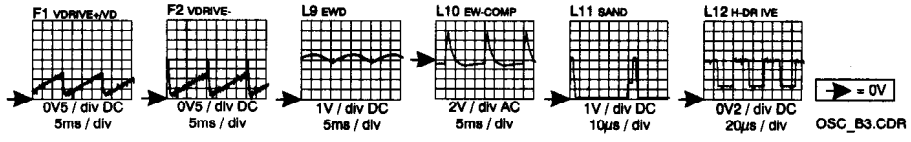
Euroconnector 2 / Eurostecker 2 / Scart 2



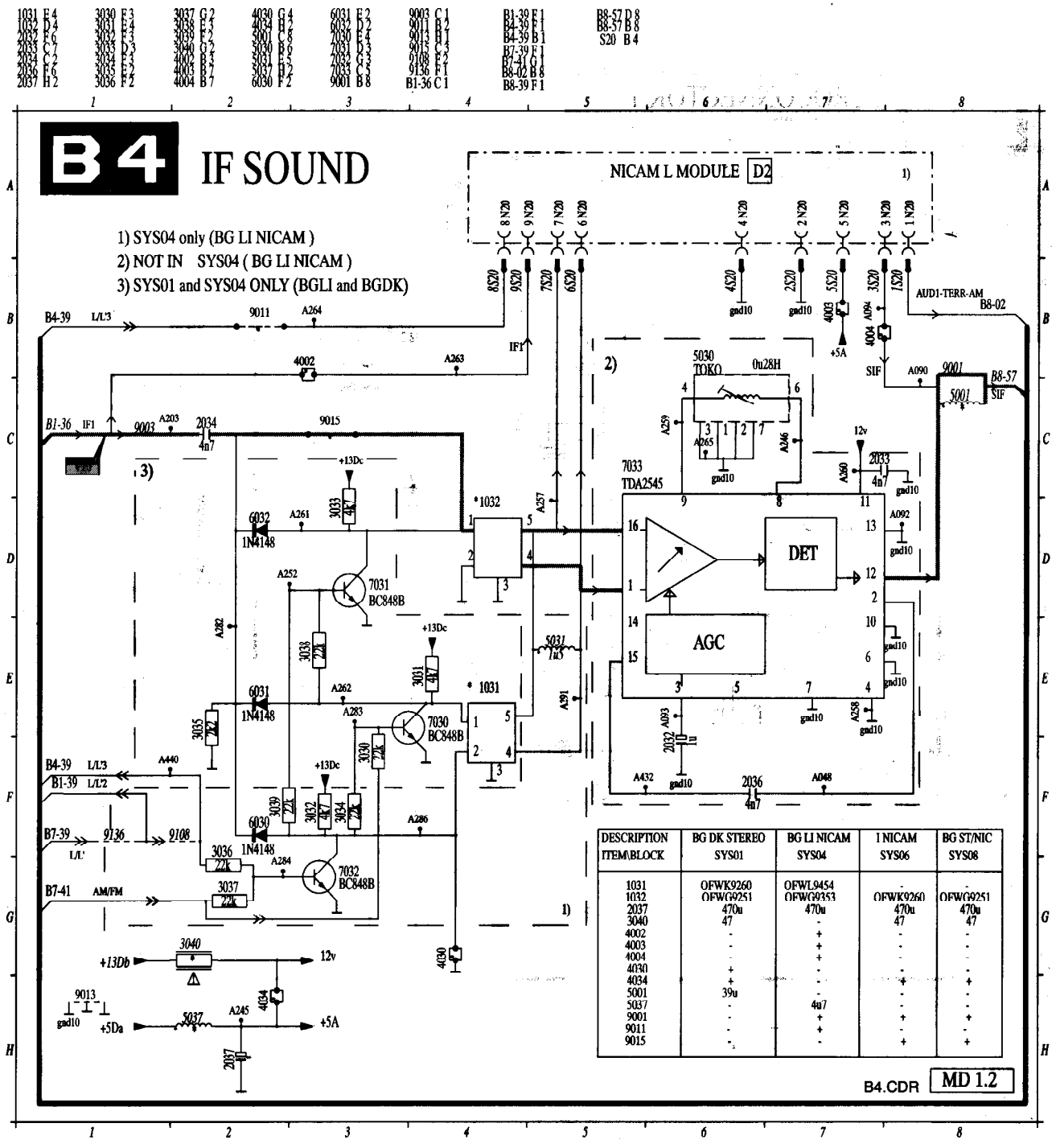
Synchronisation / Synchronisierung / Synchronisation

2128 B2 2140 E4 2167 B5 2169 B3 2170 C2 2171 C5 2172 D1
2173 C1 2175 G3 2176 F4 2177 E2 2178 F5 3113 D2 3121 A2
3122 C2 3124 B3 3125 B2 3126 B2 3169 B5 3170 D5 3171 E5
3172 C1 3173 C5 3174 D2 3175 G4 3176 F5 3177 E2 3178 F4
3179 E5 3180 E2 4114 D2 4115 D6 7119 C3 7120 B2 9120 G2
9128 G2 B2-50 D6 B3-32 D1 B3-32 F6 B3-50 D6 B3-50 D1 B3-80 B1
B3-80 F6 S11 C7

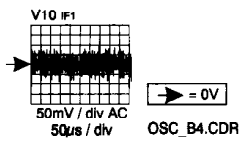




IF sound / ZF Ton / FI son



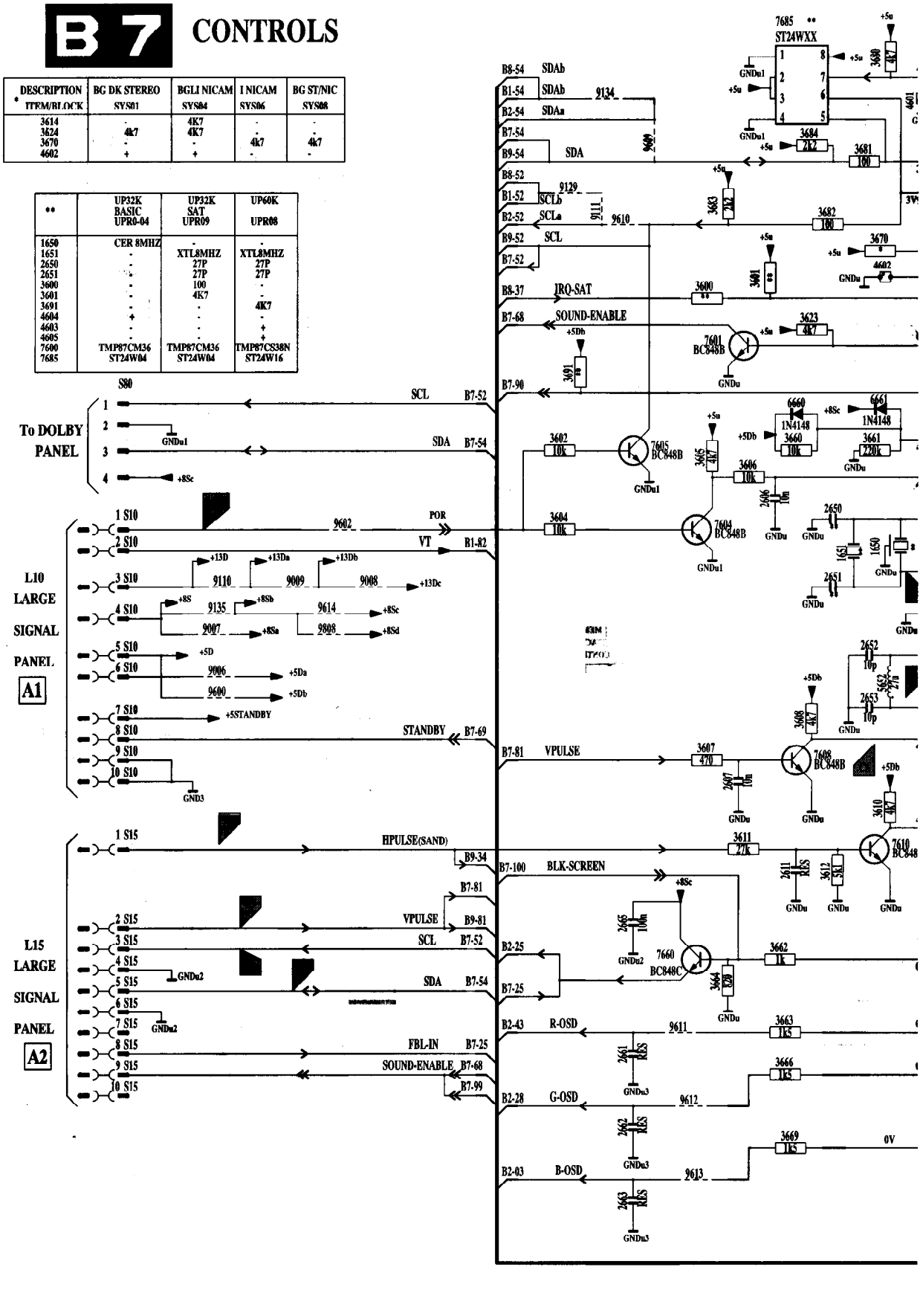
DESCRIPTION ITEM\BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1031	OFWK9260	OFWL9454	-	-
1032	OFWG9251	OFWG9353	OFWK9260	OFWG9251
2037	470u	470u	470u	470u
3040	47	-	47	47
4002	-	+	-	-
4003	-	+	-	-
4004	-	+	-	-
4030	+	-	+	-
4034	+	-	-	+
5001	39u	-	-	-
5037	-	4u7	-	-
9001	-	+	+	+
9011	-	+	-	-
9015	-	-	+	+

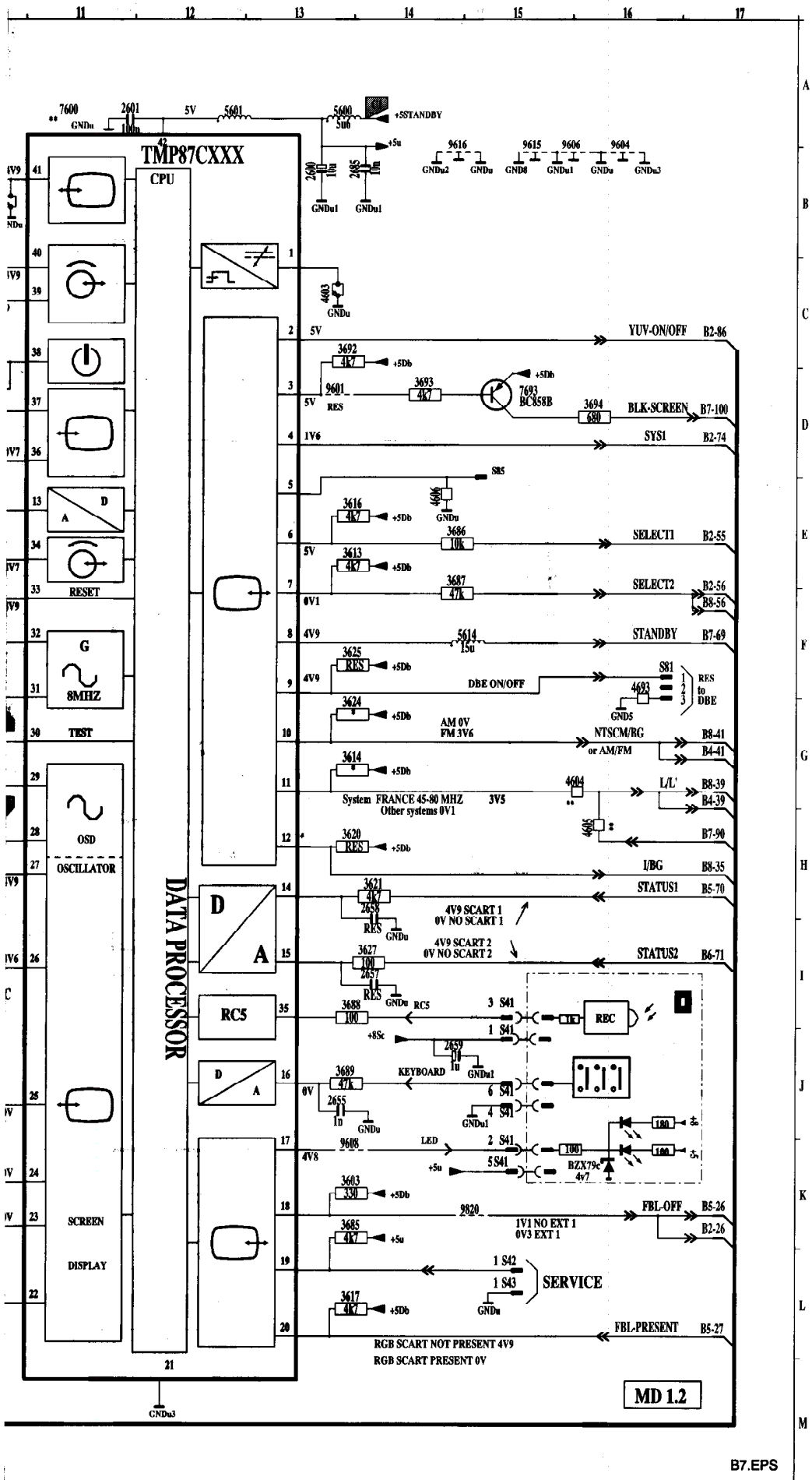


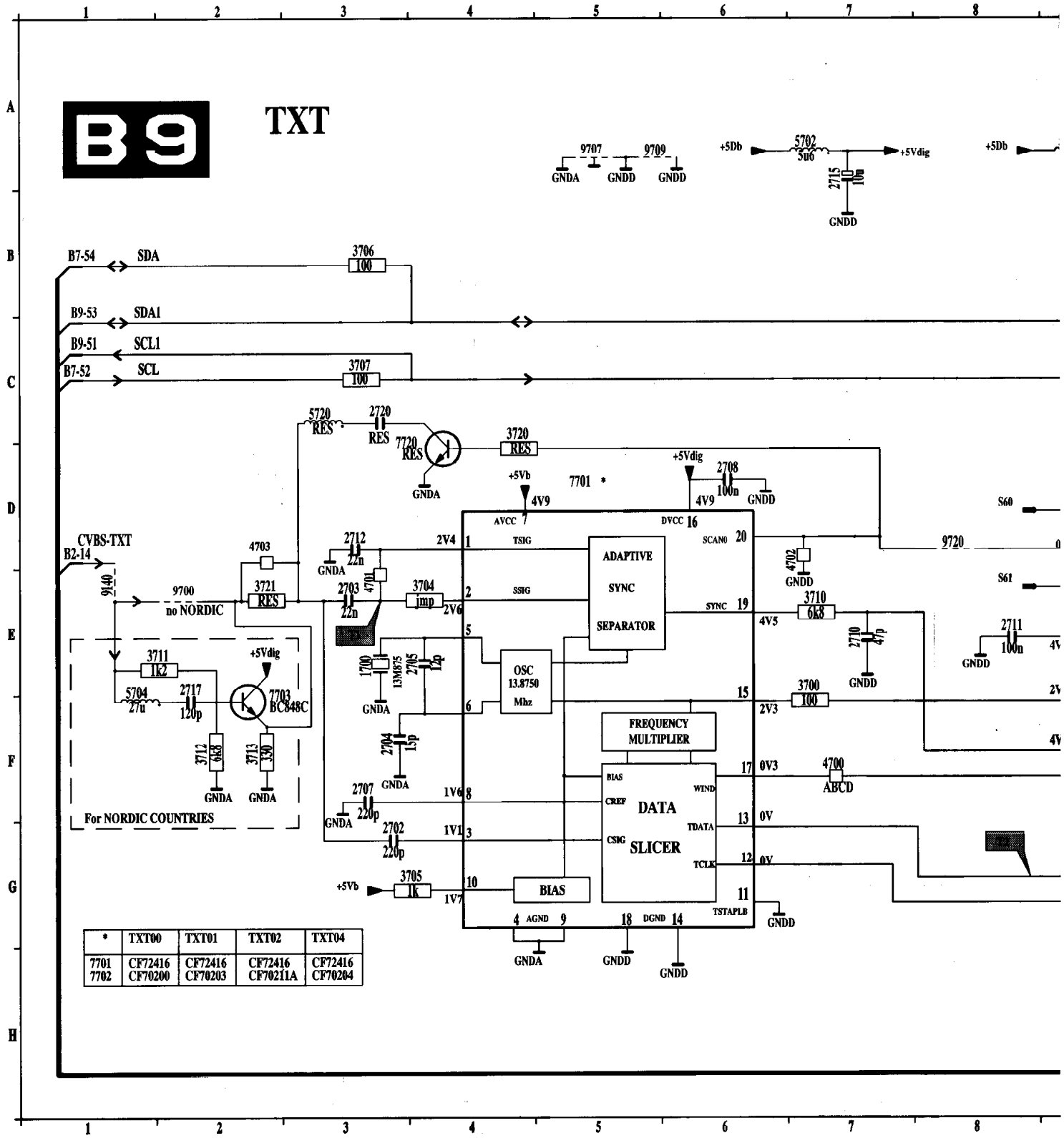
B 7 CONTROLS

* ITEM/BLOCK	DESCRIPTION	BG DK STEREO SYS01	BGLI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
3614		-	4K7	-	-
3624		4k7	4K7	-	-
3670		-	-	4k7	4k7
4602		+	+	-	-

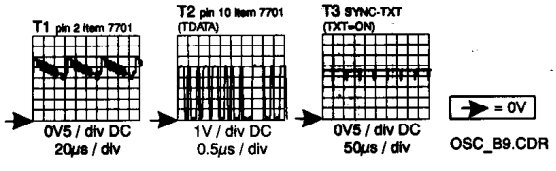
**	UP32K BASIC UPR0-04	UP32K SAT UPR09	UP60K UPR08
1650	CER 8MHZ	-	-
1651	-	XTL8MHZ	XTL8MHZ
2650	-	27P	27P
2651	-	27P	27P
3600	-	100	-
3601	-	4K7	-
3691	-	-	4K7
4604	+	-	-
4603	-	-	+
4605	-	-	+
7600	TMP87CM36	TMP87CM36	TMP87CS38N
7685	ST24W04	ST24W04	ST24W16

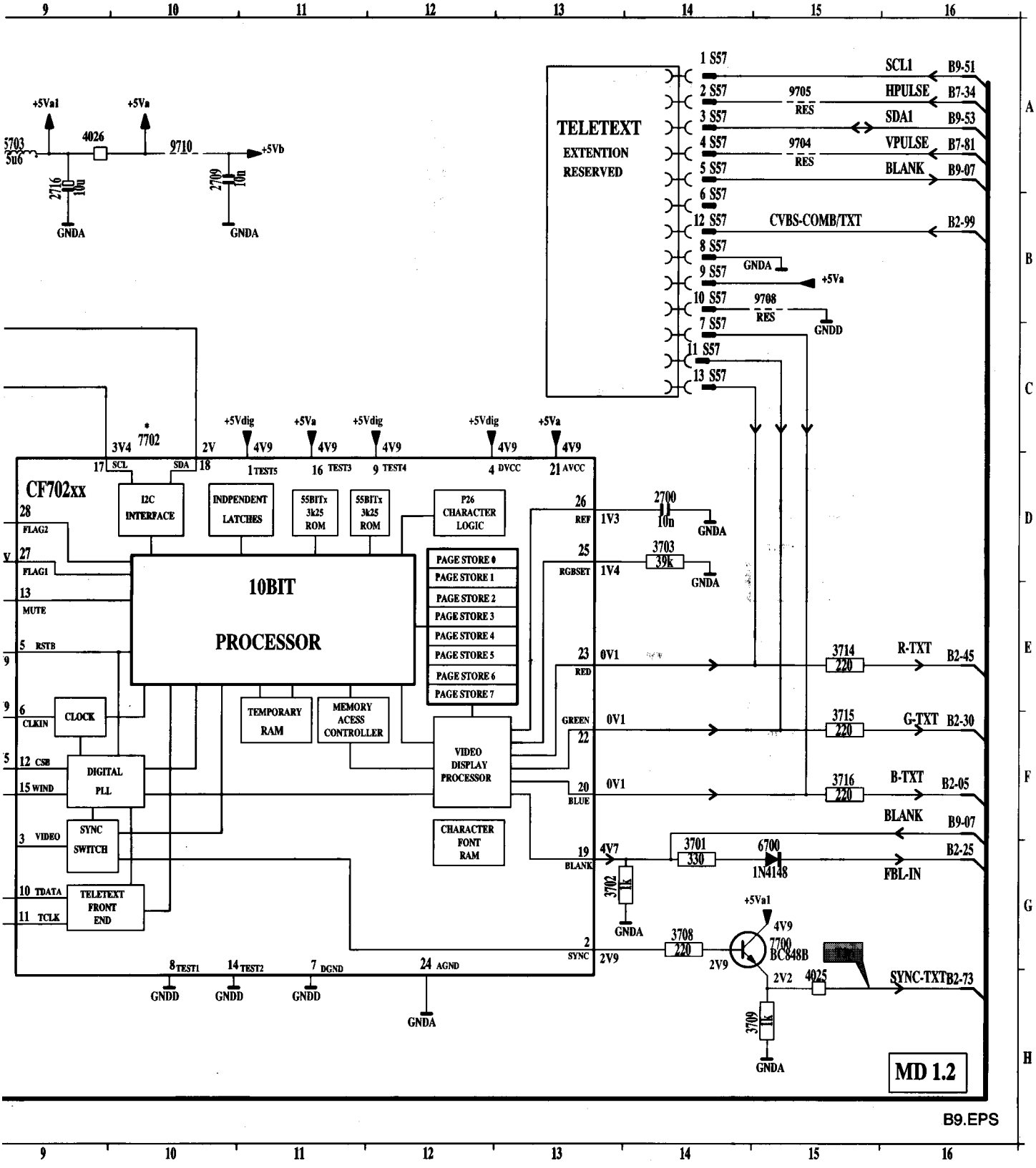



TMP87CXXX
CPU
DATA PROCESSOR
YUV-ON/OFF B2-86
BLK-SCREEN B7-100
SYS1 B2-74
SELECT1 B2-55
SELECT2 B2-56 B8-56
STANDBY B7-69
DBE ON/OFF
RES to DBE
NTSCM/BG B8-41 B4-41
or AM/FM
L/L' B8-39 B4-39
B7-90
I/BG B8-35
STATUS1 B5-70
STATUS2 B6-71
4V9 SCART 1
0V NO SCART 1
4V9 SCART 2
0V NO SCART 2
RC5
KEYBOARD
LED
FBL-OFF B5-26 B2-26
1V1 NO EXT 1
0V3 EXT 1
SERVICE
FBL-PRESENT B5-27
RGB SCART NOT PRESENT 4V9
RGB SCART PRESENT 0V
REC
BZX79c 4v7
RESET
TEST
8MHZ
OSD
OSCILLATOR
SCREEN
DISPLAY
MD 1.2
B7.EPS

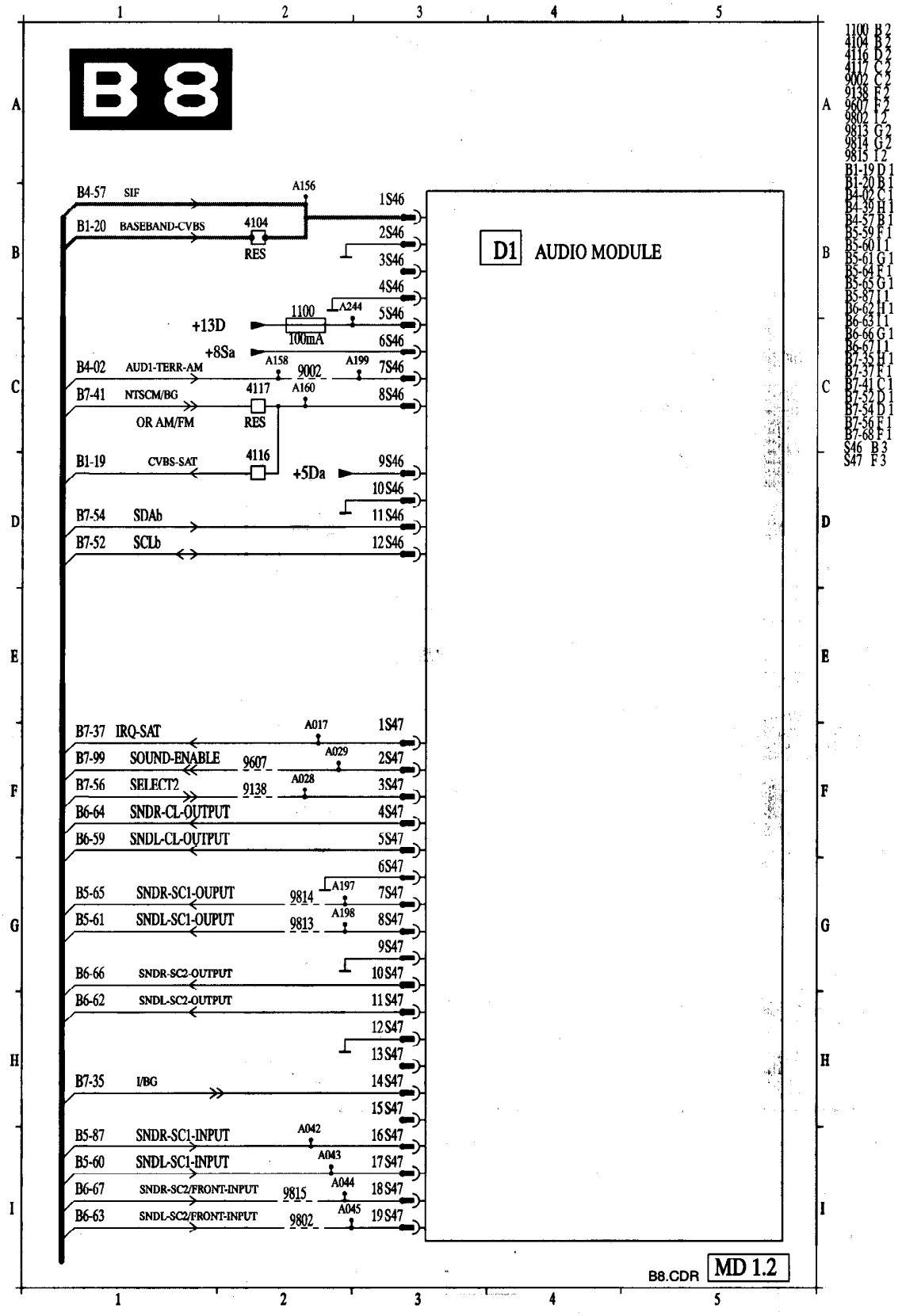


*	TXT00	TXT01	TXT02	TXT04
7701	CF72416	CF72416	CF72416	CF72416
7702	CF70200	CF70203	CF70211A	CF70204



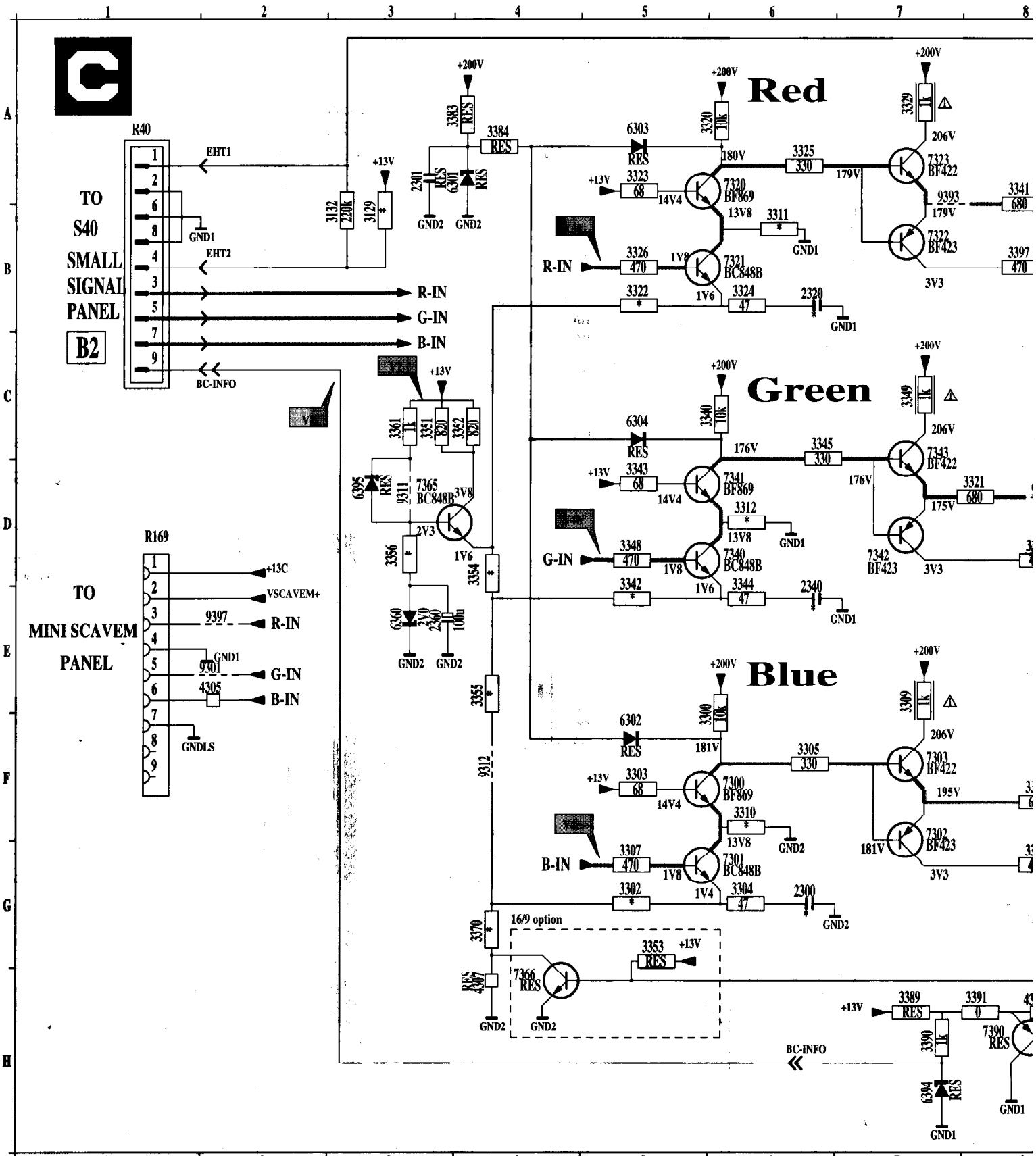

TELETEXT
EXTENTION
RESERVED
1 S57
2 S57
3 S57
4 S57
5 S57
6 S57
12 S57
8 S57
9 S57
10 S57
7 S57
11 S57
13 S57
SCL1
HPULSE
SDA1
VPULSE
BLANK
CVBS-COMB/TXT
B9-51
B7-34
B9-53
B7-81
B9-07
B2-99
9705
9704
9708
RES
GNDA
GNDD
+5Va
+5Vdig
+5Val
CF702xx
10BIT
PROCESSOR
I2C
INTERFACE
INDPENDENT
LATCHES
55BITx
3k25
ROM
P26
CHARACTER
LOGIC
PAGE STORE 0
PAGE STORE 1
PAGE STORE 2
PAGE STORE 3
PAGE STORE 4
PAGE STORE 5
PAGE STORE 6
PAGE STORE 7
TEMPORARY
RAM
MEMORY
ACESS
CONTROLLER
VIDEO
DISPLAY
PROCESSOR
CHARACTER
FONT
RAM
CLOCK
DIGITAL
PLL
SYNC
SWITCH
TELETEXT
FRONT
END
R-TXT
G-TXT
B-TXT
BLANK
FBL-IN
SYNC-TXT
BC848B
1N4148
MD 1.2
B9.EPS

Connections audio module / Verbindungen Audio Modul / Connections de module audio



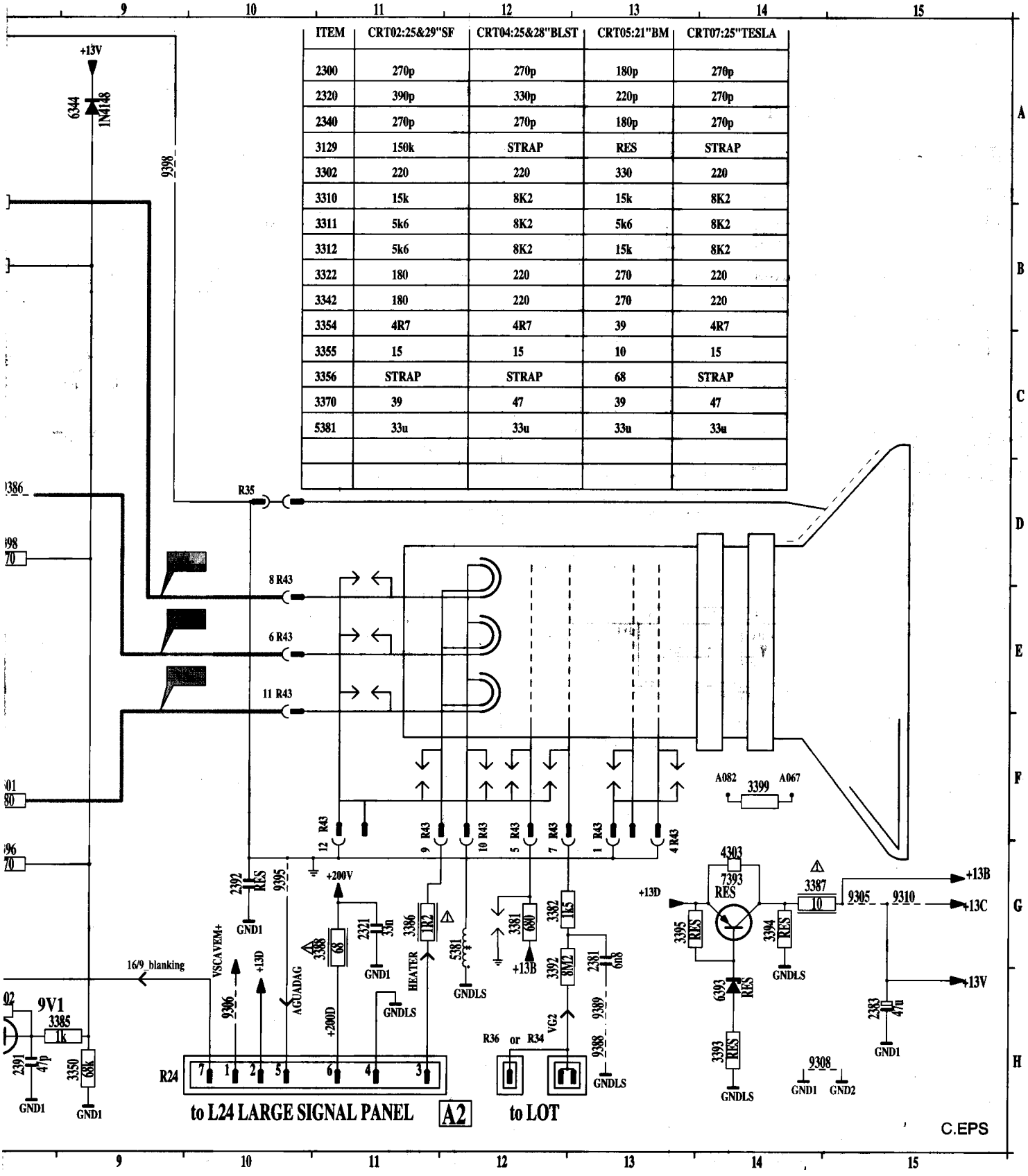
CRT panel / CRT-Platine / Platine tube cathodique

1000 C15	2360 E3	3300 E6	3309 E7	3323 A5	3342 E5	3351 C3	3370 G4	3387 G14	3394 G14	4303 G14	6304 C5	730
1300 G12	2381 G13	3301 F8	3310 F6	3324 B6	3343 D5	3352 C4	3381 G12	3388 G11	3395 G13	4305 E2	6344 A9	730
2300 G6	2383 H15	3302 G5	3311 B6	3325 A6	3344 E6	3353 G5	3382 G12	3389 H7	3396 G8	4307 H4	6360 E3	730
2301 A5	2391 H8	3303 F5	3312 D6	3326 B5	3345 C6	3354 D4	3383 A4	3390 H7	3397 B8	5381 G12	6393 H14	732
2320 B6	2392 G10	3304 G6	3320 A6	3329 A7	3348 D5	3355 E4	3384 A4	3391 H8	3398 D8	6301 A4	6394 H7	732
2321 G11	3129 B3	3305 F6	3321 D8	3340 C6	3349 C7	3356 D3	3385 H9	3392 G12	3399 F14	6302 E5	6395 D3	732
2340 E6	3132 B3	3307 G5	3322 B5	3341 A8	3350 H9	3361 C3	3386 G11	3393 H14	4302 H8	6303 A5	7300 F6	732

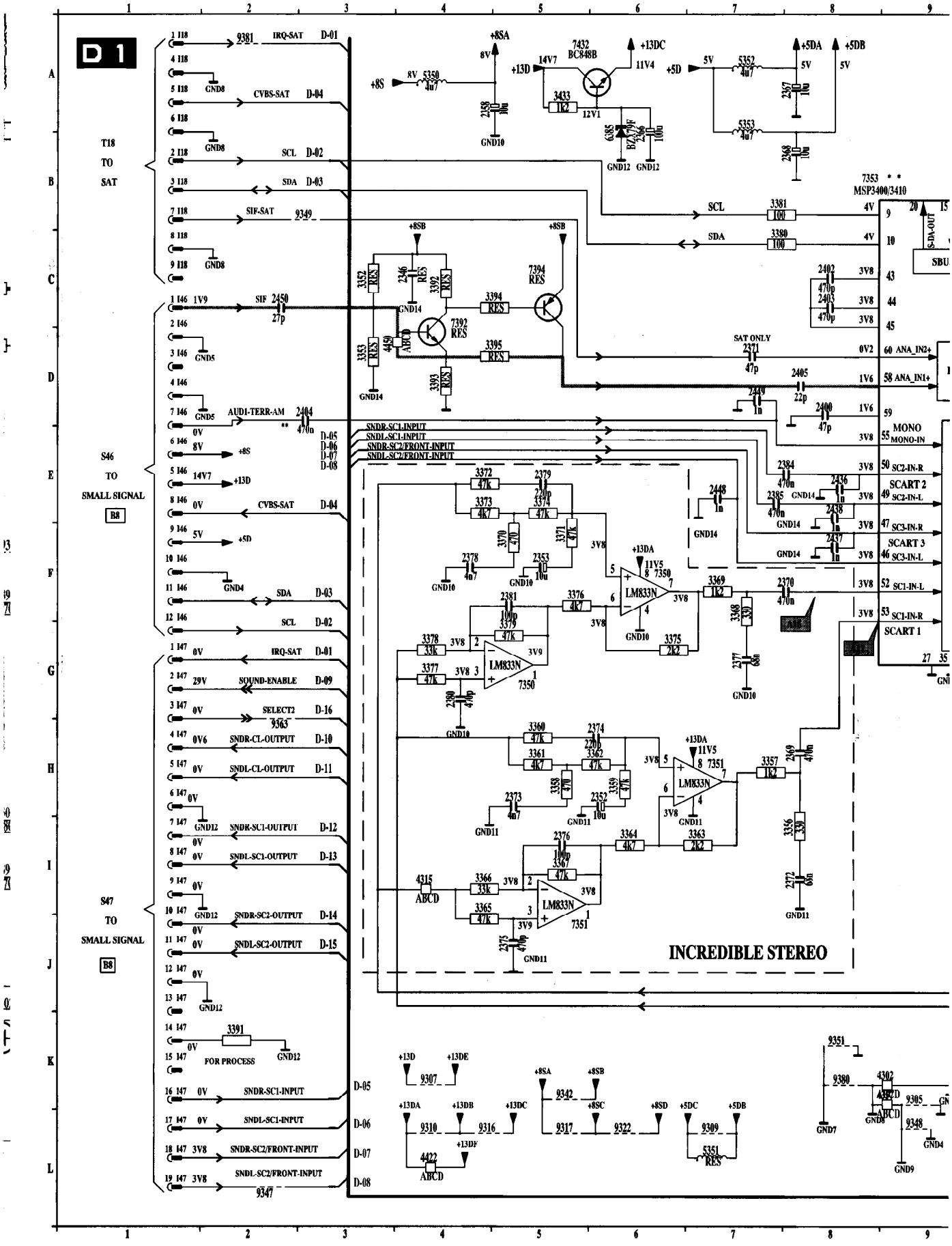


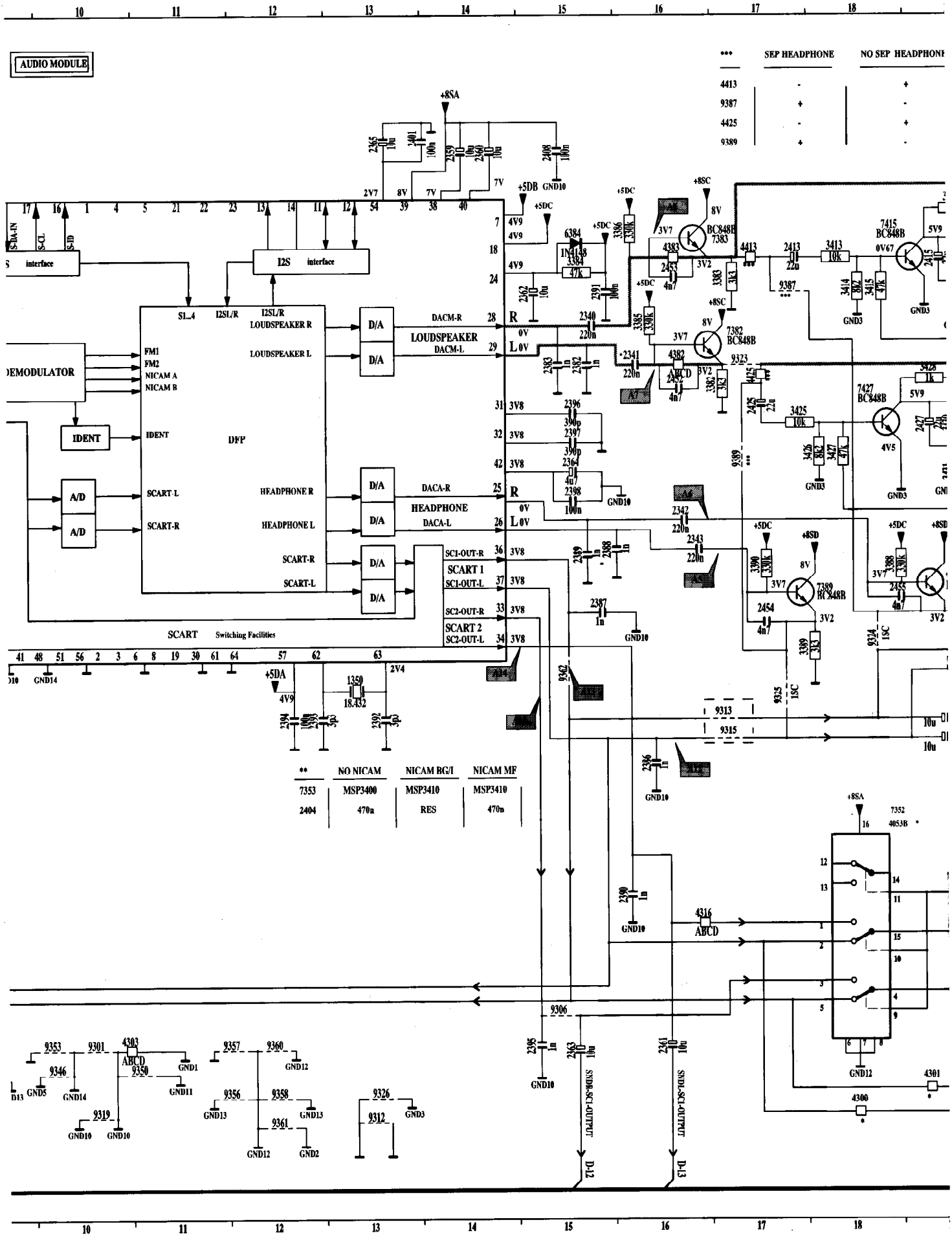
G 6	7340 D 6	7393 G14	9312 F 4	9398 A 9	R40 A 1		
F 7	7341 D 6	9301 E 2	9386 D 8	A067 F14	R43 E10		
F 7	7342 D 7	9305 G15	9388 H13	A082 F14	R169 D1		
A 6	7343 C 7	9306 H10	9389 H13	R24 H 9			
B 6	7365 D 3	9308 H14	9393 A 7	R34 H12			
B 7	7366 H 4	9310 G15	9395 G10	R35 D10			
A 7	7390 H 8	9311 D 3	9397 E 2	R36 H12			

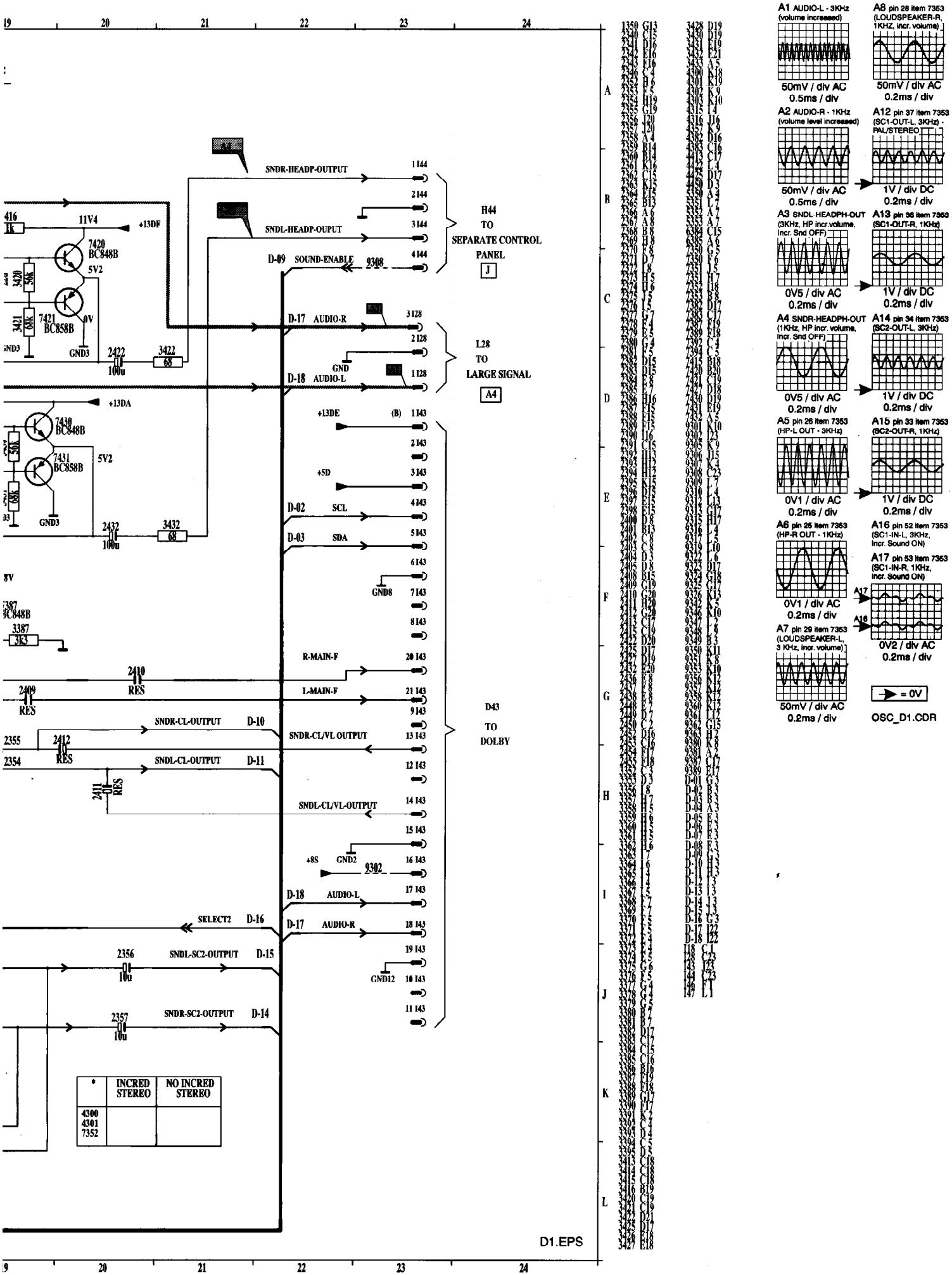
ITEM	CRT02:25&29"SF	CRT04:25&28"BLST	CRT05:21"BM	CRT07:25"TESLA
2300	270p	270p	180p	270p
2320	390p	330p	220p	270p
2340	270p	270p	180p	270p
3129	150k	STRAP	RES	STRAP
3302	220	220	330	220
3310	15k	8K2	15k	8K2
3311	5k6	8K2	5k6	8K2
3312	5k6	8K2	15k	8K2
3322	180	220	270	220
3342	180	220	270	220
3354	4R7	4R7	39	4R7
3355	15	15	10	15
3356	STRAP	STRAP	68	STRAP
3370	39	47	39	47
5381	33u	33u	33u	33u



Audio module / Audio Modul / Module audio



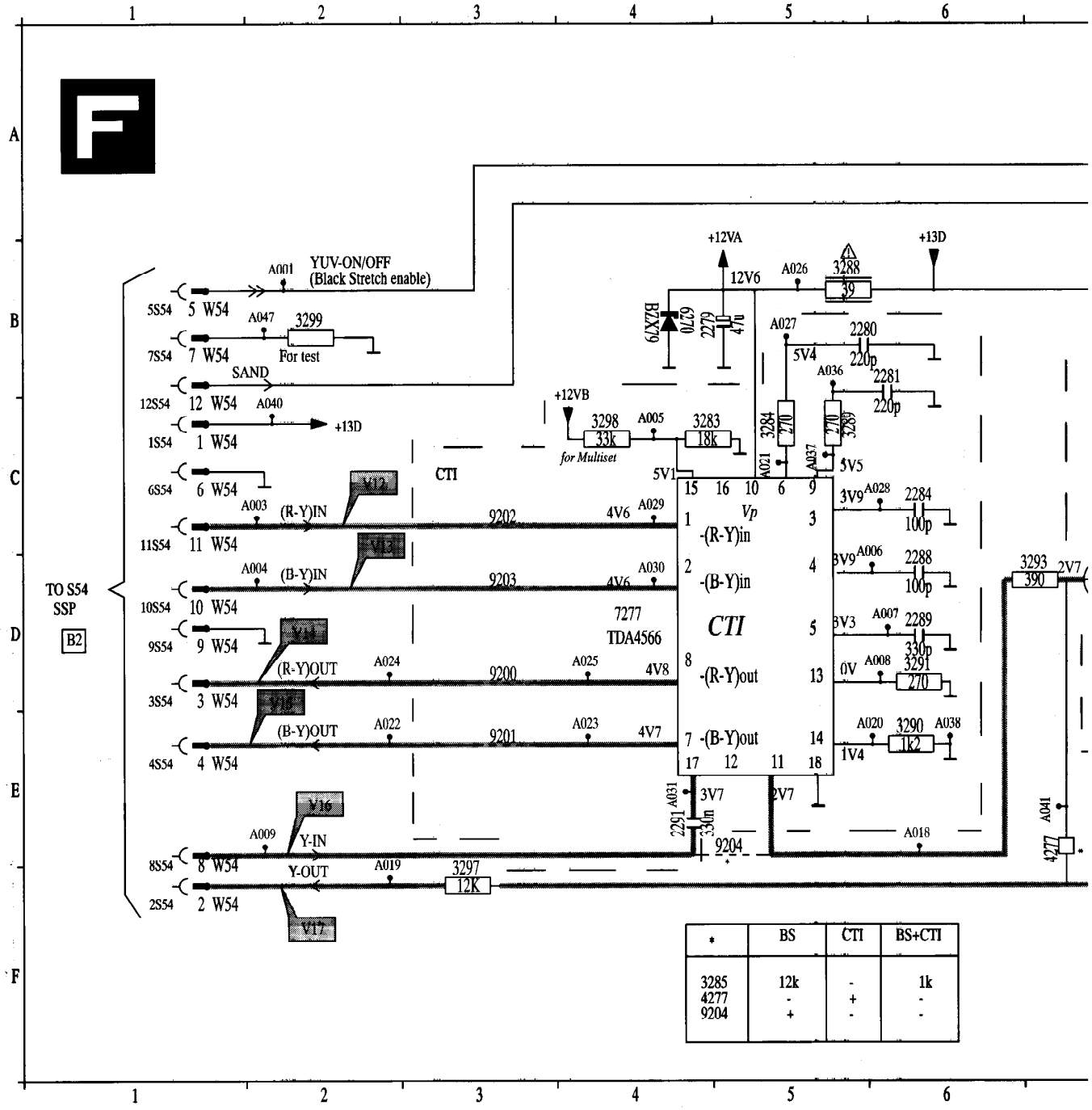

AUDIO MODULE
*** SEP HEADPHONE NO SEP HEADPHONE
4413 - +
9387 + -
4425 - +
9389 + -
+8SA
+5DB
+5DC
+8SC
+8SD
GND10
GND3
GND12
GND14
GND5
GND11
GND1
GND13
GND2
S-DA-IN
S-CL
S-ID
I2S interface
S1..4
I2SL/R
I2SL/R LOUDSPEAKER R
LOUDSPEAKER L
DEMODULATOR
FM1
FM2
NICAM A
NICAM B
IDENT
DFP
SCART-L
SCART-R
HEADPHONE R
HEADPHONE L
D/A
A/D
DACM-R
DACM-L
DACA-R
DACA-L
LOUDSPEAKER
HEADPHONE
SC1-OUT-R
SC1-OUT-L
SC2-OUT-R
SC2-OUT-L
SCART 1
SCART 2
SCART Switching Facilities
BC848B
BC848R
ABCD
** NO NICAM NICAM BG/I NICAM MF
7353 MSP3400 MSP3410 MSP3410
2404 470n RES 470n
7352 4053B
4316
9306
SUB-SCL-OUTPUT
SUB-SDA-OUTPUT
D-12
D-13


SNDR-HEADP-OUTPUT
SNDL-HEADP-OUPUT
D-09 SOUND-ENABLE
H44 TO SEPARATE CONTROL PANEL J
D-17 AUDIO-R
D-18 AUDIO-L
L28 TO LARGE SIGNAL A4
+13DE
+5D
D-02 SCL
D-03 SDA
R-MAIN-F
L-MAIN-F
SNDR-CL-OUTPUT D-10
SNDR-CL/VL OUTPUT
SNDL-CL-OUTPUT D-11
SNDL-CL/VL-OUTPUT
SELECT2 D-16
SNDL-SC2-OUTPUT D-15
SNDR-SC2-OUTPUT D-14
D43 TO DOLBY
11V4
5V2
0V
GND3
GND
GND8
GND12
GND2
+13DF
+13DA
+8S
RES
INCRED STEREO
NO INCRED STEREO
4300
4301
7352
D1.EPS

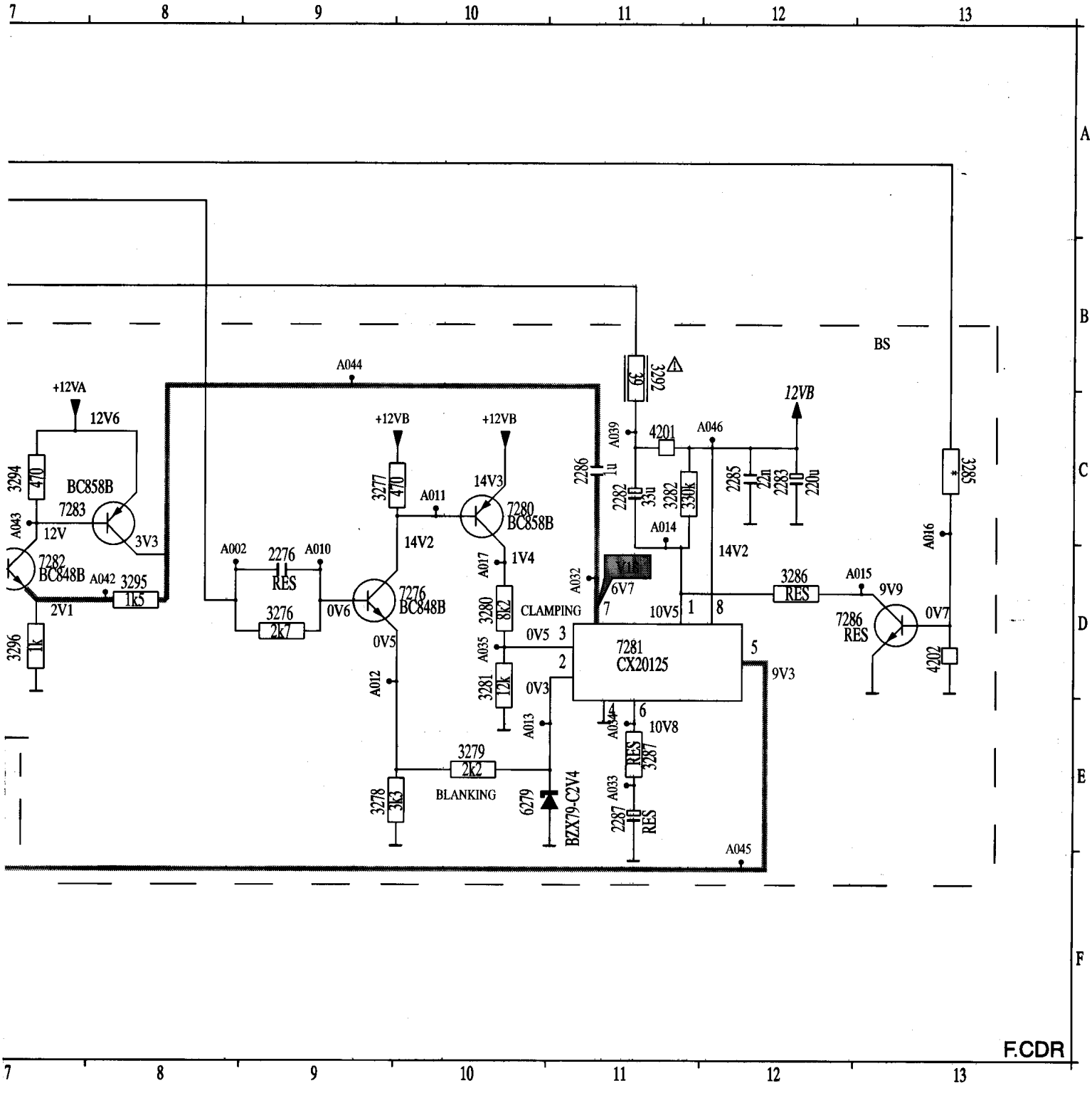
A1 AUDIO-L - 3KHz (volume increased)
50mV / div AC
0.5ms / div
A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHZ, incr. volume)
50mV / div AC
0.2ms / div
A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div
A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO
1V / div DC
0.2ms / div
A3 SNDL-HEADPH-OUT (3KHz, HP incr.volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div
A13 pin 36 item 7353 (SC1-OUT-R, 1KHz)
1V / div DC
0.2ms / div
A4 SNDR-HEADPH-OUT (1KHz, HP incr. volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div
A14 pin 34 item 7353 (SC2-OUT-L, 3KHz)
1V / div DC
0.2ms / div
A5 pin 26 item 7353 (HP-L OUT - 9KHz)
0V1 / div AC
0.2ms / div
A15 pin 33 item 7353 (SC2-OUT-R, 1KHz)
1V / div DC
0.2ms / div
A6 pin 25 item 7353 (HP-R OUT - 1KHz)
0V1 / div AC
0.2ms / div
A16 pin 52 item 7353 (SC1-IN-L, 3KHz, Incr. Sound ON)
A17 pin 53 item 7353 (SC1-IN-R, 1KHz, Incr. Sound ON)
A17
A16
0V2 / div AC
0.2ms / div
A7 pin 29 item 7353 (LOUDSPEAKER-L, 3 KHz, incr. volume)
50mV / div AC
0.2ms / div
= 0V
OSC_D1.CDR

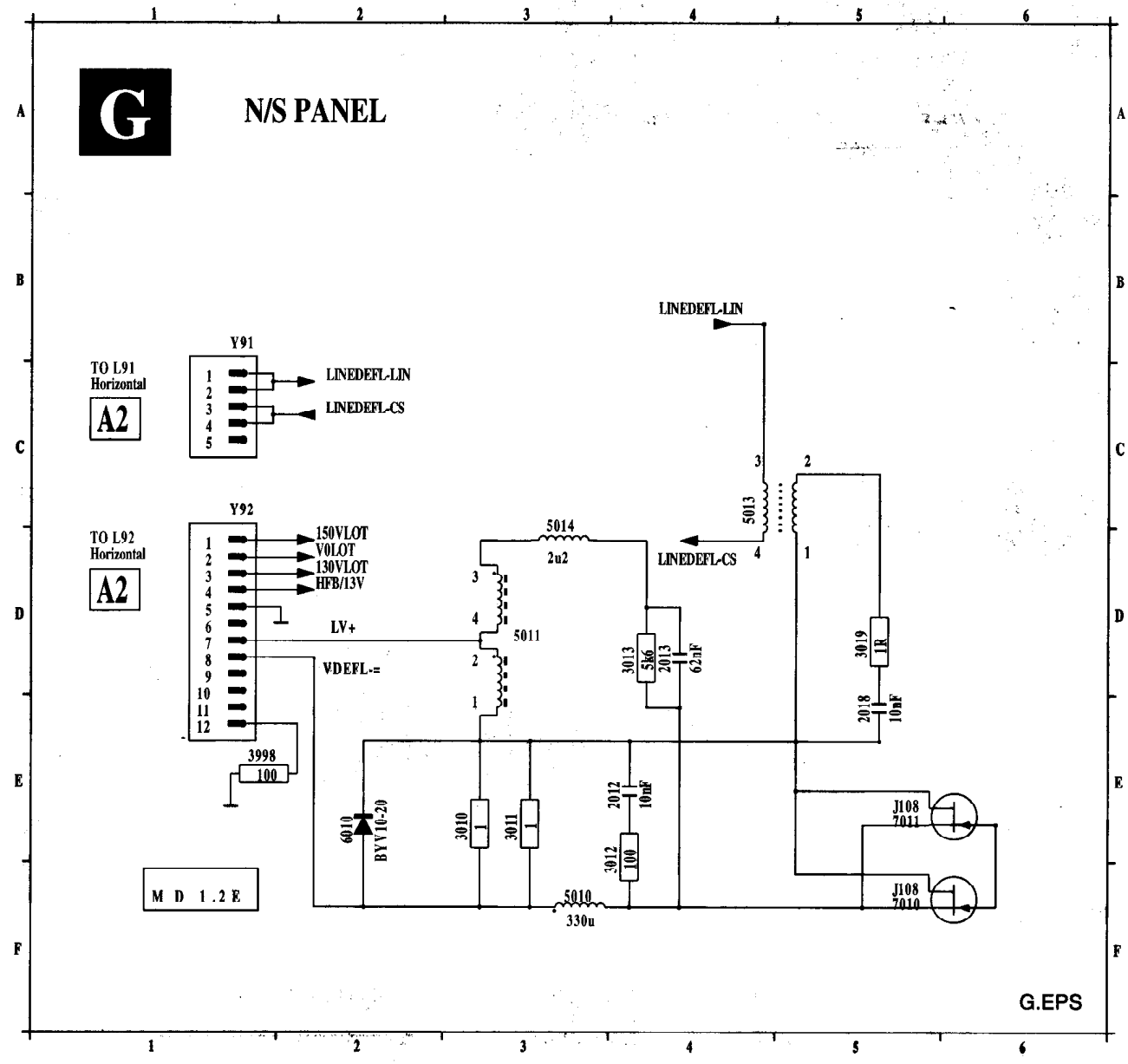
CTI/Black Stretch panel /

2276 D 9	2284 C 6	2291 E 4	3281 D10	3287 E11	3293 D 7	3299 B 2	7276 D10	7286 D13	W54 B 1
2279 B 5	2285 C12	3276 D 9	3282 C11	3288 B 5	3294 C 7	4201 C11	7277 D 4	9200 D 3	
2280 B 5	2286 C11	3277 C 9	3283 C 4	3289 C 5	3295 D 8	4202 D13	7280 C10	9201 E 3	
2281 B 6	2287 E11	3278 E 9	3284 C 5	3290 E 6	3296 D 7	4277 E 7	7281 D11	9202 C 3	
2282 C11	2288 D 6	3279 E10	3285 C13	3291 D 6	3297 F 3	6270 B 4	7282 D 7	9203 D 3	
2283 C12	2289 D 6	3280 D10	3286 D12	3292 B11	3298 C 4	6279 E10	7283 C 7	9204 E 5	

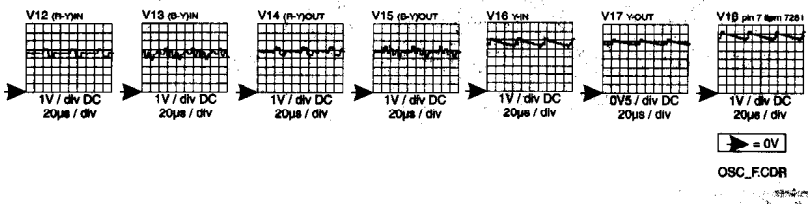


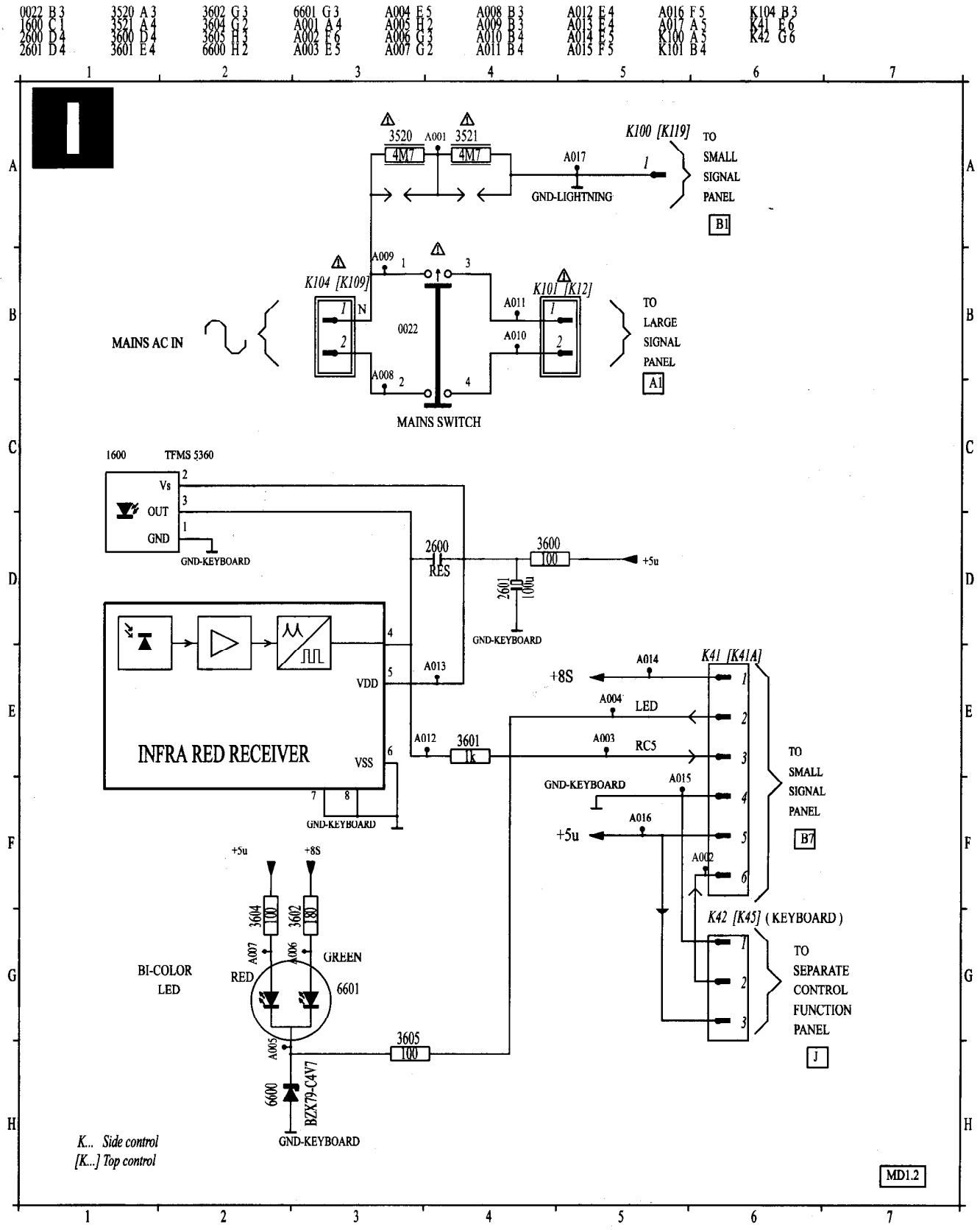
CTI/Black Stretch Platine / Platine CTI/Black Stretch

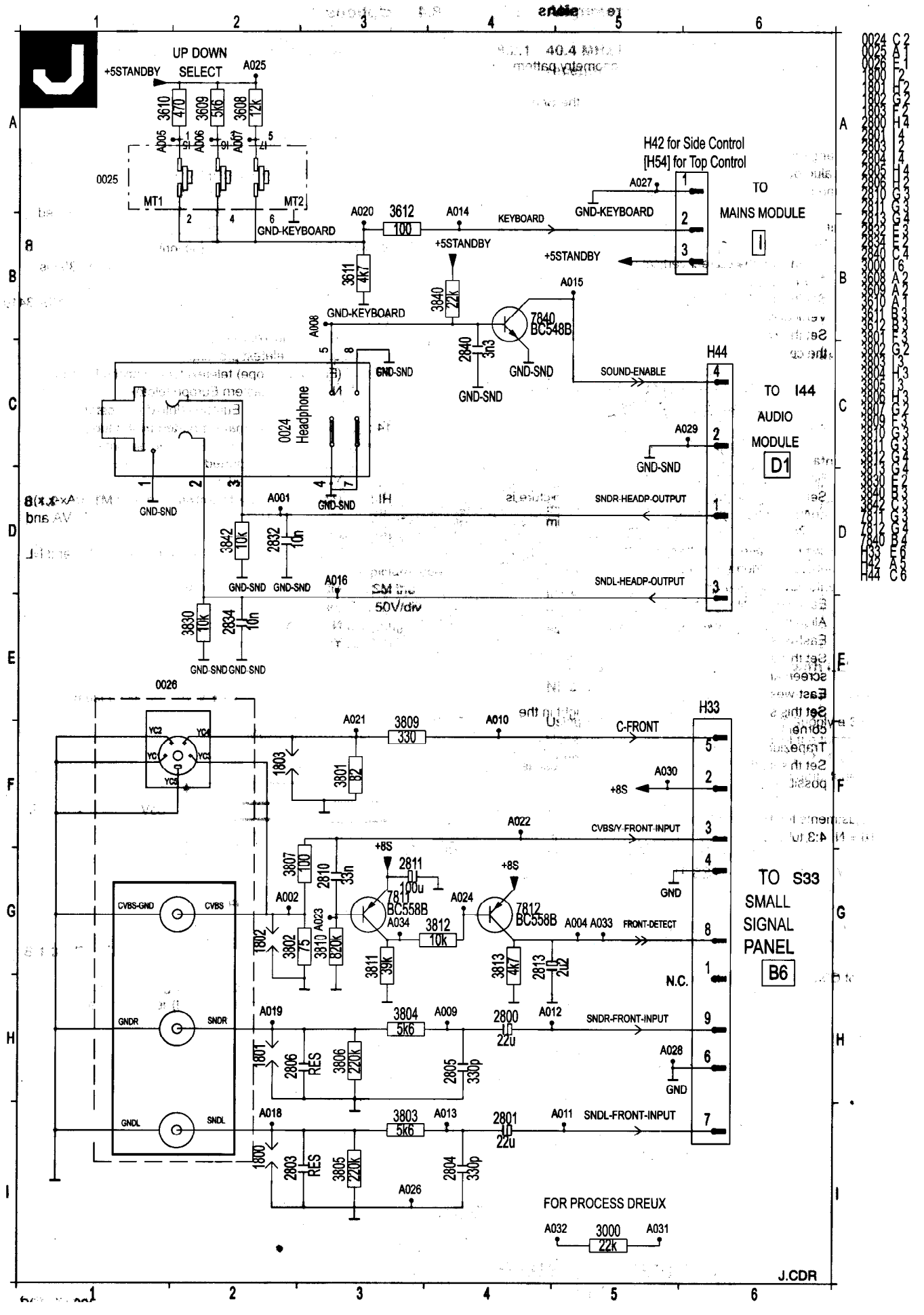




2012 E 4
2013 D 4
2018 E 5
3010 E 3
3011 E 3
3012 E 4
3013 D 4
3019 D 5
3998 E 1
5010 F 3
5011 D 3
5013 C 4
5014 C 3
6010 E 2
7010 F 5
7011 E 5
Y91 B 1
Y92 D 1




0022 B3
1600 C1
2600 D4
2601 D4
3520 A3
3521 A4
3600 D4
3601 E4
3602 G3
3604 G2
3605 H3
6600 H2
6601 G3
A001 A4
A002 F6
A003 E5
A004 E5
A005 H2
A006 G3
A007 G2
A008 B3
A009 B3
A010 B4
A011 B4
A012 E4
A013 E4
A014 E5
A015 F5
A016 F5
A017 A5
K100 A5
K101 B4
K104 B3
K41 E6
K42 G6
3520
A001
3521
4M7
4M7
A017
GND-LIGHTNING
K100 [K119]
TO SMALL SIGNAL PANEL
B1
A009
K104 [K109]
K101 [K12]
MAINS AC IN
N
0022
A011
A010
TO LARGE SIGNAL PANEL
A1
A008
MAINS SWITCH
1600
TFMS 5360
Vs
OUT
GND
GND-KEYBOARD
2600
RES
3600
100
+5u
2601
100u
GND-KEYBOARD
INFRA RED RECEIVER
VDD
VSS
A013
A012
3601
1k
GND-KEYBOARD
+8S
A014
K41 [K41A]
A004
LED
A003
RC5
GND-KEYBOARD
A015
A016
+5u
A002
TO SMALL SIGNAL PANEL
B7
K42 [K45] (KEYBOARD)
TO SEPARATE CONTROL FUNCTION PANEL
J
+5u
+8S
3604
100
3602
180
A007
A006
BI-COLOR LED
RED
GREEN
6601
A005
3605
100
6600
BZX79-C4V7
GND-KEYBOARD
K... Side control
[K...] Top control
MD1.2


UP DOWN SELECT
+5STANDBY
A025
3610 470
3609 5k6
3608 12k
A005 A006 A007
0025
MT1 MT2
GND-KEYBOARD
A020 3612 100
A014
KEYBOARD
H42 for Side Control
[H54] for Top Control
A027
GND-KEYBOARD
TO MAINS MODULE
I
+5STANDBY
3611 4k7
3840 22k
A015
7840 BC548B
A008
2840 3n3
GND-SND
SOUND-ENABLE
H44
TO I44 AUDIO MODULE D1
0024 Headphone
A029
A001
SNDR-HEADP-OUTPUT
3842 10k
2832 10n
A016
SNDL-HEADP-OUTPUT
50V/div
3830 10k
2834 10n
0026
YC2 YC4 YC1 YC3 YC5
A021 3809 330
A010
C-FRONT
H33
1803
3801 82
A030
+8S
A022
CVBS/Y-FRONT-INPUT
3807 100
2810 33n
2811 100u
7811 BC558B
7812 BC558B
A024
A034
3812 10k
A004 A033
FRONT-DETECT
TO S33 SMALL SIGNAL PANEL B6
CVBS-GND CVBS
A002
A023
1802
3802 75
3810 820k
3811 39k
3813 4k7
2813 10 2u2
N.C.
GNDR SNDR
A019
3804 5k6
A009
2800 10 22u
A012
SNDR-FRONT-INPUT
1801
2806 RES
3806 220k
2805 330p
A028
GND
GNDL SNDL
A018
3803 5k6
A013
2801 10 22u
A011
SNDL-FRONT-INPUT
1800
2803 RES
3805 220k
2804 330p
A026
FOR PROCESS DREUX
A032 3000 22k A031
J.CDR

8.3.2 Geometry adjustments (for software versions M12COx-3.x and M12BAx-x.x)

Connect a pattern generator and select a geometry pattern (signal at 475.25 MHz)

- Switch to the Service Default Mode, then to the Service Alignment Mode.
- Select the desired alignment with the ↑ / ↓ keys.
- Change the selected alignment with the ← / → keys.
- A value between 0 and 63 can be selected.
- Changed values are stored immediately.

Vertical

VP : Vertical Shift
Set this for the correct vertical position.

VA : Picture height
Set this for the correct picture height.

VL : Vertical linearity
Set this so that the vertical centre of the picture is at the centre of the tube.

VS : Vertical S-correction
Set this so that the height of the squares in the top of the picture equal the height in the bottom of the picture.

Horizontal

HD : Horizontal shift.
Set this so that the horizontal centre of the picture is on the centre of the tube.

For sets with a screen size larger than 21", the following alignments can be done as well. For 21" sets these alignments have no function.

HW : East-west width
Align the picture width with this.

HP : East-west parabola correction
Set this so that the vertical lines at the sides of the screen are straight.

HC : East-west corner-correction.
Set this so that the vertical lines are straight in the corners.

HT : Trapezium correction
Set this so that the vertical lines are as vertical as possible.

Adjustments for 16:9 sets (reserved)

16 = N 4:3 tube (options SS, D1, D2, D3 and D4 not available (blue))

16 = Y 16:9 tube (options SS, D1, D2, D3 and D4 available)

8.4 Options

E2 : Number of Euro/Scart connectors (options N or Y)
- N 1 Euro/Scart connector present
- Y 2 Euro/Scart connectors present

UO : Tuner type
- N UHF/VHF tuner (item 1000 is UV916S)
- Y UHF tuner (item 1000 is UV944S). Used in the United Kingdom (/05 sets)

LL : Nicam L (options N or Y)
- N Nicam L not present
- Y Nicam L present (Nicam L panel required and item 7353 is MSP3410)

NI : Nicam (stereo) sound (options N or Y)
- N Only 2CS stereo, no Nicam (item 7353 is MSP3400)
- Y 2CS and Nicam stereo (item 7353 is MSP3410)

TT : Teletext (options N or Y)
- N No Teletext present
- Y Teletext present

ET : (Eastern Europe) teletext type (options N or Y)
- N No Eastern Europe teletext
- Y Eastern Europe teletext (/58 sets)

14 : 14:9 Picture format supported by 4:3 tube (options N or Y)
- N Not supported
- Y Supported

HI : Histogram (not with software version M12BAx-x.x)
- N No Histogram present (options VG, VA and NL not available (blue))
- Y Histogram present (options VG, VA and NL available)

M2 : MD1.1E or MD1.2E chassis (only with software version M12BAx-x.x)
- N MD1.1E chassis
- Y MD1.2E chassis

8. Electrical alignments

General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 6.

Alignment conditions:
All electrical adjustments should be performed under the following conditions:

- Power supply voltage: 240V ± 10%, 50Hz ± 5%.
- Warm-up time: ~ 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: Ri > 10MΩ; Ci < 2,5 pF.

8.1 Adjustments on the large signal panel

8.1.1 95V/140V supply voltage

For 21" TV-sets
Connect a voltmeter to the cathode of D6567.
With the aid of R3532 adjust the power supply voltage to 95V ± 0,5V.

For sets 21"
Connect a voltmeter to the cathode of D6567.
With the aid of R3559 adjust the power supply voltage to 140V ± 1V.

8.1.2 VG2 adjustment

Connect a pattern generator displaying a full black picture. Switch the TV-set to the service default mode (see chapter 6). Connect an oscilloscope to the picture tube cathodes for red, green and blue (pins 6, 8 en 11 of the picture tube socket). Set the oscilloscope to DC, 50V/div and 2 ms/div. Measure the DC level of the measuring pulses at the end of the frameblanking (see fig. 8.1). Using the Vg2 potentiometer on the linetransformer (bottom potentiometer) the measuringpulse with the highest level must be set to +160V ± 2V.

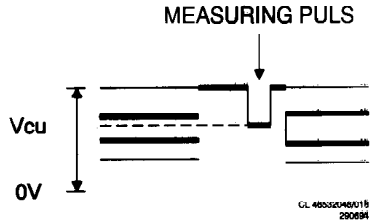


Figure 8.1

8.1.3 Focusing

Is aligned using the focuspotentiometer on the linetransformer (top potentiometer).

8.2 Alignments on the small signal panel

8.2.1 40.4 MHz IF filter (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) and a capacitor of 5,6 pF supply a 40,4 MHz signal to pin 17 of the tuner. Connect an oscilloscope to pin 1 of filter 1016. Switch on the set and select in the installation menu MANUAL; SYSTEM EUR.W. Align coil L5117 for maximum DC output voltage.

8.2.2 AFC

Switch the set to service default mode (see chapter 8). Using a pattern generator (e.g. PM5518) supply a signal on a frequency of 475,25 MHz
Align coil L5114 for optimal picture quality.

8.2.3 Picture demodulator (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) supply a 32.95MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.
Align the signal level of the generator so that the DC-voltage on pin 5 of the tuner is 5V.
Switch on the set and select in the installation menu MANUAL; SYSTEM FRANCE. Align capacitor C2106 for minimal voltage on pin 5 of the tuner.

8.2.4 RF-AGC

If the signal of a strong local transmitter is distorted, align the value for AX (AGC crossover) in the service menu (see chapter 8) until the picture is no longer distorted.

8.2.5 Audio demodulator (Not for sets with LL' and NICAM reception possibility)

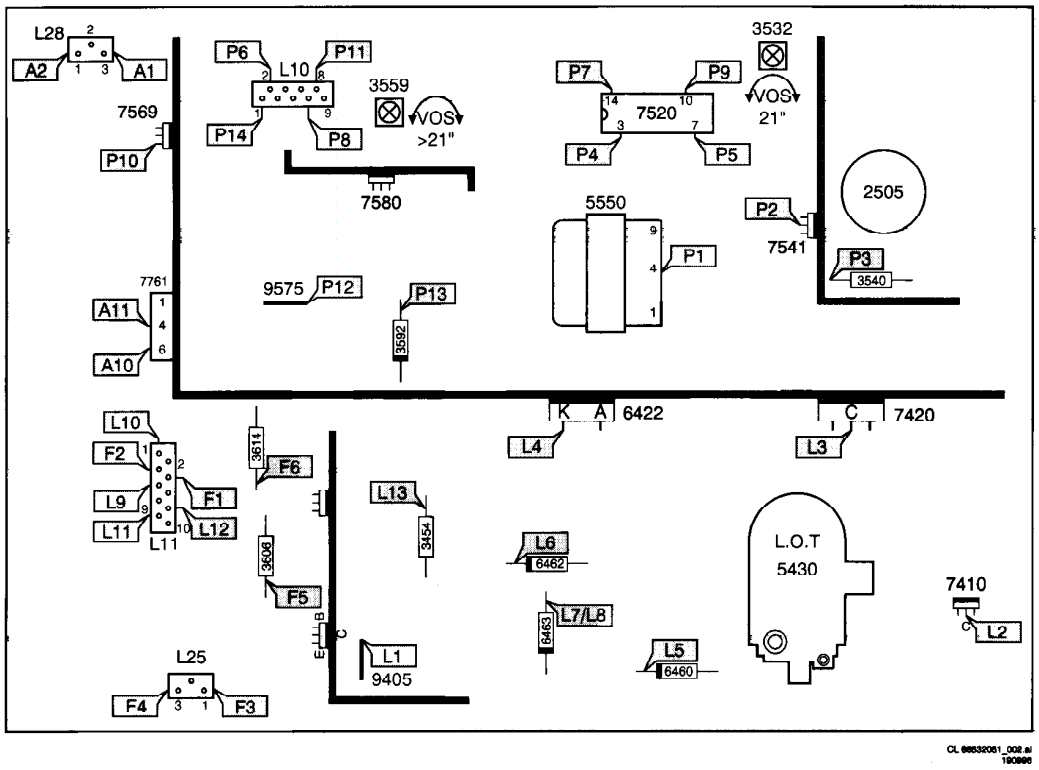
Using a signal generator (e.g. PM5326) supply a 38.9MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.
Connect an oscilloscope (2ms/div) to pin 12 of IC7033 (TDA3845). Align coil L5030 for minimal amplitude.

8.3 Picture tube alignments

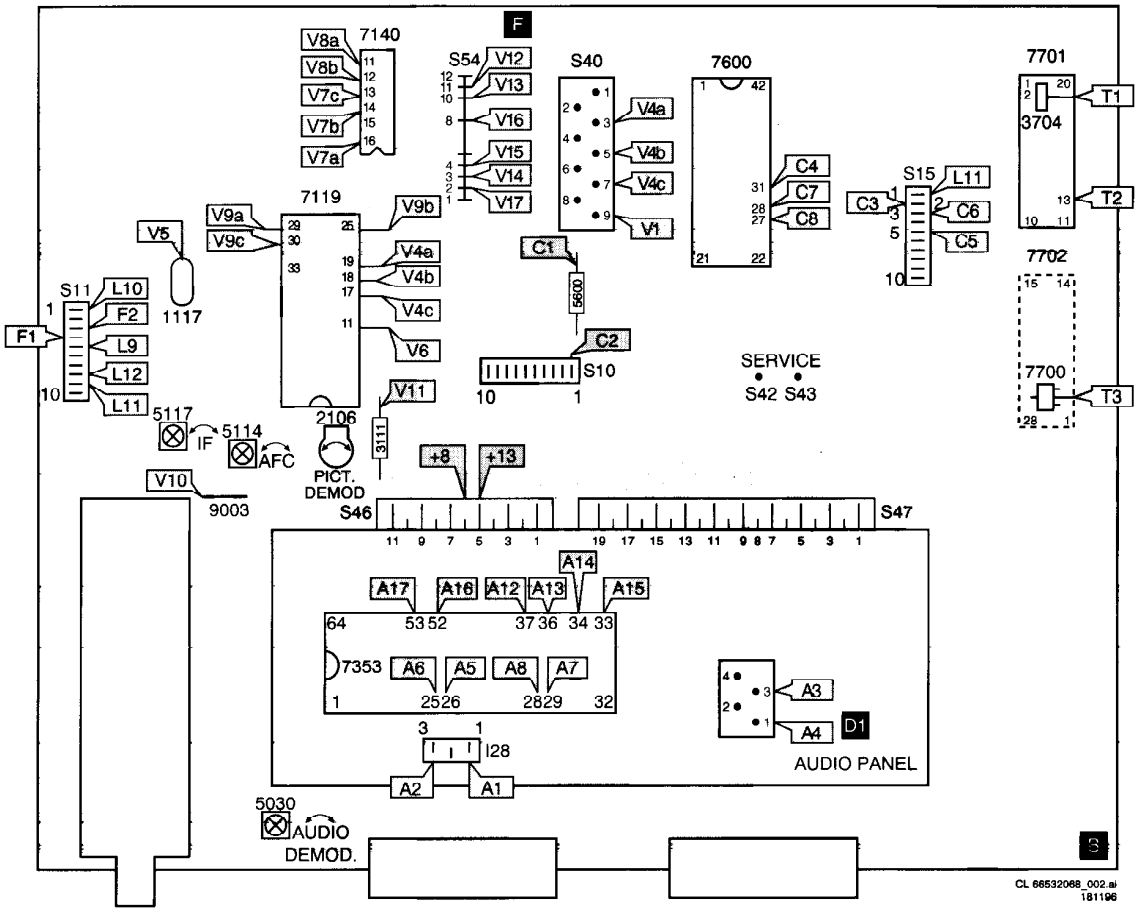
8.3.1 Whitebalance

Connect a pattern generator and select a white picture. Set contrast to maximum (63) for 21" or to 40 for 21" tv-sets. Use the ↑ / ↓ keys to select an alignment and the ← / → keys to change the value. Set GD to 50, RD to 57 and BD to 45.
If necessary change the settings for RD and BD for a correct white balance.

Large signal panel / Groß-Signal Platine / Platine forts signaux



Small signal panel / Klein-Signal Platine / Platine petits signaux



11. List of abbreviations

AC	Alternating Current
AF_AMP	Audio frequency amplifier
AGC	Automatic gain control
AM	Amplitude modulation
ATS	Automatic Tuning System
AQUADAG	Earth from the CRT
AUD_TERR_AM	Audio (AM) from the antenna
AUD1_TERR_AM	Audio (AM) from the antenna
AUDIO L	Audio left
AUDIO R	Audio right
AUDIO_L	Left to DBE module
AUDIO_R	Right to DBE module
B	Blue signal to CRT panel
B_IN	Blue signal input
BC_INFO	Beam current information
B_SC_INPUT	Blue input from Euro connector
B_TXT	Blue Teletext signal
(B-Y) IN	B-Y input signal
(B-Y) OUT	Colour difference signal out
BC_INFO	Black current info from CRT panel
BG DK STEREO	System PAL BG DK; stereo sound
BG LI NICAM	System PAL BGI; NICAM sound
BG LI STEREO	The stereo signal from PAL BGI or SECAM L
BG_ST/NIC	System BG stereo with NICAM sound
Bk	Burst key pulse
BLANK	Blanking signal
BLK	Black stretch
BLKSTR	Black stretch
BLS	Black line S
BLKSCREEN	Blank screen, signal from the microcomputer
BM	Black matrix
B_OSD	Blue on screen display signal
C_AFU	Centre signal to module
C_FILTER	Chrominance filter
C_FRONT	Chrominance signal from separate controls panel
C_INPUT	Chrominance from Euro connector 2
CRT	Cathode ray tube
CRT..	Indicator for different CRT types
CTI	Colour transient improvement
CURR.SENZE	Current sense to detect current
CUT_OFF	Signal to align the black level of the RGB signals
CVBS	Composite Video Blanking Synchronisation
CVBS/Y_FRONT	CVBS or luminance from separate controls
CVBS/Y_SC2/FRONT_INPUT	CVBS/luminance signal from Euro connector/front input
CVBS_COMB/TXT	CVBS signal to teletext
CVBS_SC1_INPUT	CVBS signal from Euro connector 1
CVBS_SC2	CVBS signal from Euro connector 2
CVBS_SC2_OUT	CVBS outgoing signal from Euro connector 2
CVBS_SECAM	CVBS signal to SECAM IC
CVBS_TERR	CVBS from the antenna
CVBS_TERR/SAT	CVBS Signal from antenna or from satellite
CVBS_TXT	CVBS to Teletext
CVBS_SAT	CVBS signal from satellite tuner
D/A	Digital to analogue converter
DACA_L	Left output signal from DFP to headphone (independent volume controlled)
DACA_R	Right output signal from DFP to headphone (independent volume controlled)
DACAM_L	Left output signal from DFP to loudspeaker
DACAM_R	Right output signal from DFP to loudspeaker
DC	Direct Current
DEGAUSS	Degaussing
DELAY	Luminance delay
DET	Detector
DFP	Digital Sound Processor
DEMOD	Demodulator

EAR1	Earth 1 (ground)
EARTH	Earth (ground)
EAST EU	East Europe
EHT	Extra high tension
EHTINFO	Voltage related to beam current
EHTINFO1	Voltage related to beam current to CRT panel
EW	East-west
EW_COMP	East-west compensation
EWD	East-west drive
FBL_IN	Fast blanking in
FBL_OFF	Fast blanking off
FBL_PRESENT	From Euro connector, detects if there is a full page RGB at the Euro connector or OSD or a MENU from an external source
FILA_CRT	Filament for the CRT
FM	Frequency modulation
FOLDB	Foldback
FRAMEDEFL_R	Frame deflection right signal
FRONT_DETECT	Signal to detect if on separate controls panel video signals are present
FRONT_INPUT	Input from separate controls panel at front side of the TV set
G_IN	Green signal in
G_OSD	Green (on screen display) signal
G_SC_INPUT	Green input from Euro connector
G_TXT	Green Teletext signal
G-Y	Colour difference signal
G_Y MATRIX	RGB luminance matrix
GND..	Ground ..
GND_AUDIO	Ground
GND_KEYBOARD	Ground of keyboard
GND_LIGHTNING	Ground on mains module
GND_LINE_SS	Ground from SS-panel for line drive
GND_SOUND_SUPPLY	Ground to the audio amplifier
GND_VO	Ground to the deflection
GNDB	Ground B
GNDD	Ground D
G/V	Green signal to CRT panel
H	Horizontal pulse
HDRIVE	Horizontal drive signal
HEATER	Output voltage to the tube heater
HFBL	Feedback from line deflection
HPULSE	From deflection module, horizontal pulse for OSD synchronisation
HIST	Histogram
I/BG	To Sound module, selects the audio system
IDENT	Identification
I NICAM	System NICAM/PAL I
IF	Intermediate-frequency
INT/EXT	Internal or external switching
IRQ	From the Satellite or Teletext module, interrupt signal from these modules
ITT	Type indication Sound module
I^2C	Inter IC bus
I/O	Input/Output
LED	Light emitting diode
LF	Low frequency
L/L	To BIMOS module and Sound module, switches between the L and L' system
LINEDEFL_CS	Connection for geometry correction panels
LINEDEFL_LIN	Connection for geometry correction panels
LOT	Line output transformer
NC	Not connected
NICAM	Near Instantaneous Compending Audio Multiplex (digital sound system)
NICAM L	System L-NICAM
NO NORDIC	Not used in set for Nordic countries
NTSCM/BG	Switching signal
OK	Correct
OSC	Oscillator

List of abbreviations

PAL	Phase Alternating Line (colour system)
P_GND	Audio power ground
PHASE COMP	Phase compensation
PLL	Phase lock loop
POR	Power-on reset
PROT	Protection
R	Red signal to CRT panel
RC5	Remote Control signal
R-IN	Red input signal
(R-Y)IN	Colour difference (R-Y) input signal
R_OSD	Red (on screen display) signal
R_SC_INPUT	Red input from Euro connector
R_TXT	Red Teletext
R_Y OUT	Colour difference signal out
RGB	Red Green Blue
SAND	Sand castle
SAND1	Sand castle signal to Scan module
SBUS	Sound bus
SCART_L	Sound signal L from Euro connector
SCART_R	Sound signal R from Euro connector
SAT	Satellite
SCL	I²C Clock signal
SCLI	Serial clock pulse
SDA	I²C data
SDAa	To every other module, serial data
SDAI	Serial data pulse
SECAM	SEquentiel Coleur A Memoire (colour system)
SECAM L	System L-SECAM
SELECT	Selection signal for Euroconnectors or separate controls
SEP CTRL	Separate controls
SF	Super flat
SIF	Sound IF
SIF_SAT	Sound IF from satellite tuner
SNDL	Sound left,
SNDL_CL_OUTPUT	Left sound to CL output from sound module
SNDL_FRONT	Left sound signal from separate controls panel
SND_HEADP_OUTPUT	Output sound left to the headphone connector
SNDL_SC1_INPUT	Left sound output signal from the audio module
SNDL_SC1_OUTPUT	Output signal, sound left to Euro connector 1
SNDL_SC2_/FRONT_INPUT	Input signal sound L from Euro connector 2 or front input
SNDL_SC2_OUTPUT	Output signal sound L to Euro connector 2
SNDL__SPEAKER	Sound L signal to loudspeaker
SNDR	Sound right
SNDR_CL/VL_OUTPUT	Right CL/VL audio signal from Dolby
SNDR_CL_OUTPUT	Sound right, constant level output to rear cinches
SNDR_FRONT	Sound right from separate controls panel
SNDR_HEADP_OUTPUT	Output sound right to the headphone connector
SNDR_SC1_INPUT	Input signal, sound right to Euro connector 1
SNDR_SC1_OUTPUT	Output signal sound R to Euro connector 1
SNDR_SC2_OUTPUT	Right sound to Euro connector 2 output from sound module
SNDR+_SPEAKER	Sound R signal to loudspeaker
SNDR_SUBW	Sound R signal to subwoofer
SOUND_ENABLE	To the Audio Amplifier module, switches on and off the amplifier
SOUND_SUP	Supply voltage of amplifier
STANDBY	To supply module, switches the set in and out of standby
STATUS1	Status signal from Euro connector input to control module
STATUS2	Status signal from Euro connector 2 input to control module
STD..	Indicator for different standards
SVHS	Super VHS
SYNC	Synchronisation signal
SYNC_TXT	Synchronisation signal from Teletext
SYS	System switching signal
SYS..	Indicator for different systems
1SC	One carrier sound
2SC	Two carrier sound

TCLK	Teletext clock signal
TDATA	Teletext data signal
TUNING	Tuning voltage
TUN	Indicator for different tuners
VDRIVE	Vertical drive
VDRIVE+/VD	Vertical drive positive side
V0S	140 Volt (95 Volt for 21")
VFRAME (+ or -)	Positive or negative supply voltage for frame amplifier
VG1_CRT	VG1 input to the picture tube
VG2	G2 input to the picture tube
VIF	Video intermediate frequency
VDD	Supply voltage
V0D	Voltage used in horizontal output stage
V0D1	Voltage used in horizontal output stage
V0LOT	Voltage to line output transformer
V0CONN	Voltage to Scan module
VP	Video processor
VPROT	Protection voltage
VPULSE	From deflection module, vertical pulse for OSD synchronisation
VSS	Ground
VSCAVEM	Supply voltage for SCAVEM
VT	Tuning voltage
Y_COMB	Y (or CVBS) signal to TDA8366
Y_FRONT	Luminance signal from separate controls panel
Y_OUT	Luminance signal out
YUV_ON/OFF	To Histogram/black stretch module, switch on & off
UPR	Indicator for different control systems
WEST-EU	West Europe
21" EUR	21" Europe
+	Present, in diversity tables
-	Not present in diversity tables

3889	4822 051 20224	220k 5% 0.1W	

5030	4822 157 63068	0.28µH	
5031	4822 156 21719	1.5µH 5%	
5037	4822 157 53139	4.7µH	
5100	4822 157 60123	6.8µH	
5105	4822 157 60119	1.2µH (BG/BGI)	
5105	4822 157 63065	0.68µH (BGLI)	
5106▲	4822 157 51462	10µH	
5114	4822 157 63068	0.28µH	
5117	4822 157 53539	0.27µH 5%	
5600	4822 157 51216	5.6µH	
5601	4822 157 70826	2.4µH	
5614	4822 157 53066	15µH 10%	
5652	4822 157 71853	27U 5%	
5702	4822 157 51216	5.6µH	
5703	4822 157 51216	5.6µH	

6003	4822 130 34142	BZX79-C33	
6030▲	4822 130 30621	1N4148	
6031▲	4822 130 30621	1N4148	
6032▲	4822 130 30621	1N4148	
6105▲	4822 130 30621	1N4148	
6106▲	4822 130 30621	1N4148	
6107▲	4822 130 30621	1N4148	
6108▲	4822 130 30621	1N4148	
6109▲	4822 130 30621	1N4148	
6111	4822 130 34233	BZX79-F5V1	
6660▲	4822 130 30621	1N4148	
6661▲	4822 130 30621	1N4148	
6700▲	4822 130 30621	1N4148	
6800	4822 130 34379	BZX79-C27	
6801	4822 130 34379	BZX79-C27	
6830▲	4822 130 31983	BAT85	
6835	4822 130 34379	BZX79-C27	
6836	4822 130 34379	BZX79-C27	
6840	4822 130 34379	BZX79-C27	
6841	4822 130 34379	BZX79-C27	
6850	4822 130 34379	BZX79-C27	

7009▲	5322 130 41982	BC848B	
7010▲	5322 130 41982	BC848B	
7030▲	5322 130 41982	BC848B	
7031▲	5322 130 41982	BC848B	
7032▲	5322 130 41982	BC848B	
7033	4822 209 81878	TDA2545A/V4	
7100▲	5322 130 41982	BC848B	
7102▲	5322 130 41982	BC848B	
7104	5322 209 10576	HEF4053BP	
7105	5322 130 42136	BC848C	
7106	5322 130 41983	BC858B	
7108	5322 130 42136	BC848C	
7109	5322 130 42136	BC848C	
7110	5322 130 42136	BC848C	
7113	4822 209 90129	TDA8395P/N2	
7119	4822 209 14927	TDA8366/N4	
7120▲	5322 130 41982	BC848B	
7140	4822 209 12636	TDA4665/V4	
7150▲	5322 130 41982	BC848B	
7600	4822 900 10964	µP M12CO1-4.0	
7600	4822 900 10971	µP M12CO2-4.0	
7600	See also Product Survey		
7601▲	5322 130 41982	BC848B	
7604▲	5322 130 41982	BC848B	
7605▲	5322 130 41982	BC848B	
7608▲	5322 130 41982	BC848B	
7610	5322 130 42136	BC848C	
7660	5322 130 42136	BC848C	
7685	4822 209 14928	ST24W16B6	
7693	5322 130 41983	BC858B	
7700▲	5322 130 41982	BC848B	
7701	4822 209 90963	CF72416	
7702	4822 209 14889	CF70200E	
7702	4822 209 90964	CF70203NW	
7805	4822 130 40937	BC548B	
7826▲	5322 130 41982	BC848B	
7830	5322 130 42136	BC848C	
7850▲	5322 130 41982	BC848B	
7851	5322 130 41983	BC858B	
7867▲	5322 130 41982	BC848B	
7875	5322 209 10576	HEF4053BP	

CRT PANEL [C]

Various

1065	4822 212 10953	CRT 21" BM	
1065	4822 212 10922	CRT 25/29" SF	
	4822 265 10742	7P conn. R24	
	4822 265 41451	9P conn. R40	
▲	4822 255 70261	Socket Pict. tube	

2300	4822 122 33216	270pF 5% 50V	
2300	4822 122 33575	220pF 5% 50V	
2320▲	4822 122 33172	390pF 5% 50V	
2320	4822 122 33216	270pF 5% 50V	
2321	4822 121 41545	0.033µF 10% 250V	
2340	4822 122 33216	270pF 5% 50V	
2340	4822 122 33575	220pF 5% 50V	
2360	4822 124 81029	100µF 20% 25V	
2381	4822 121 70642	6.8nF 1600V	
2383▲	4822 124 40433	47µF 20% 25V	
2391	5322 122 32452	47pF 5% 63V	

3129	4822 050 13904	390k 1% 0.4W	
3129	4822 116 52245	150k 5% 0.5W	
3132	4822 116 83874	220k 5% 0.5W	
3300	4822 053 12103	10k 5% 3W	
3301	4822 111 30991	680Ω 10%	
3302	4822 116 83872	220Ω 5% 0.5W	
3303	4822 116 52199	68Ω 5% 0.5W	
3304	4822 116 52195	47Ω 5% 0.5W	
3305	4822 116 52219	330Ω 5% 0.5W	
3307	4822 116 52224	470Ω 5% 0.5W	
3309▲	4822 052 10102	1k 5% 0.33W	
3310	4822 116 52244	15k 5% 0.5W	
3311	4822 116 52289	5k6 5% 0.5W	
3311	4822 116 52303	8k2 5% 0.5W	
3312	4822 116 52289	5k6 5% 0.5W	
3320	4822 053 12103	10k 5% 3W	
3321	4822 111 30991	680Ω 10%	
3322	4822 116 52213	180Ω 5% 0.5W	
3322	4822 116 83872	220Ω 5% 0.5W	
3323	4822 116 52199	68Ω 5% 0.5W	
3324	4822 116 52195	47Ω 5% 0.5W	
3325	4822 116 52219	330Ω 5% 0.5W	
3326	4822 116 52224	470Ω 5% 0.5W	
3329▲	4822 052 10102	1k 5% 0.33W	
3340	4822 053 12103	10k 5% 3W	
3341	4822 111 30991	680Ω 10%	
3342	4822 116 52213	180Ω 5% 0.5W	
3342	4822 116 83872	220Ω 5% 0.5W	
3343	4822 116 52199	68Ω 5% 0.5W	
3344	4822 116 52195	47Ω 5% 0.5W	
3345	4822 116 52219	330Ω 5% 0.5W	
3348	4822 116 52224	470Ω 5% 0.5W	
3349▲	4822 052 10102	1k 5% 0.33W	
3350	4822 051 20683	68k 5% 0.1W	
3351	4822 116 52231	820Ω 5% 0.5W	
3352	4822 116 52231	820Ω 5% 0.5W	
3354	4822 051 20399	39Ω 5% 0.1W	
3354	4822 051 20478	4Ω7 5% 0.1W	
3355▲	4822 051 20109	10Ω 5% 0.1W	
3355	4822 051 20159	15Ω 5% 0.1W	
3356	4822 051 20689	68Ω 5% 0.1W	
3356▲	4822 051 20008	0Ω (jumper)	
3361	4822 051 20392	3k9 5% 0.1W	
3370	4822 051 20399	39Ω 5% 0.1W	
3381	4822 111 30991	680Ω 10%	
3382	4822 117 11896	1k5 20% 0.5W	
3385	4822 051 10102	1k 2% 0.25W	
3386▲	4822 052 10128	1Ω2 5% 0.33W	
3387▲	4822 052 10109	10Ω 5% 0.33W	
3388▲	4822 052 10689	68Ω 5% 0.33W	
3390	4822 051 10102	1k 2% 0.25W	
3391▲	4822 051 20008	0Ω (jumper)	
3392	4822 053 20825	8.2M 5% 0.25W	
3396	4822 116 52224	470Ω 5% 0.5W	
3397	4822 116 52224	470Ω 5% 0.5W	
3398	4822 116 52224	470Ω 5% 0.5W	
3399	4822 051 20399	39Ω 5% 0.1W	
3399	4822 051 20478	4Ω7 5% 0.1W	

5381	4822 156 20915	33µH	

6344▲	4822 130 30621	1N4148	
6360	4822 130 81424	BZV86-2V0	

7300	4822 130 41773	BF869	
7301▲	5322 130 41982	BC848B	
7302	4822 130 41646	BF423	
7303	4822 130 41782	BF422	
7320	4822 130 41773	BF869	
7321▲	5322 130 41982	BC848B	
7322	4822 130 41646	BF423	
7323	4822 130 41782	BF422	
7340▲	5322 130 41982	BC848B	
7341	4822 130 41773	BF869	
7342	4822 130 41646	BF423	
7343	4822 130 41782	BF422	
7365▲	5322 130 41982	BC848B	

AUDIO MODULE [D1]

Various

	4822 212 10917	Audio Mod. non-Nicam
	4822 212 10918	Audio Mod. Nicam
	4822 265 31247	3P conn. I28
	4822 265 31245	4P conn. I44
	4822 265 10419	12P conn. I46
	4822 265 10421	19P conn. I47
1350	4822 242 10434	18,432MHz

2340	4822 126 13473	220nF 20% 50V	
2341	4822 126 13473	220nF 20% 50V	
2342	4822 126 13473	220nF 20% 50V	
2343	4822 126 13473	220nF 20% 50V	
2352▲	4822 124 41579	10µF 20% 50V	
2353▲	4822 124 41579	10µF 20% 50V	
2354▲	4822 124 41579	10µF 20% 50V	
2355▲	4822 124 41579	10µF 20% 50V	
2356▲	4822 124 41579	10µF 20% 50V	
2357▲	4822 124 41579	10µF 20% 50V	
2358▲	4822 124 41579	10µF 20% 50V	
2359▲	4822 124 41579	10µF 20% 50V	
2360▲	4822 124 41579	10µF 20% 50V	
2361▲	4822 124 41579	10µF 20% 50V	
2362▲	4822 124 41579	10µF 20% 50V	
2363▲	4822 124 41579	10µF 20% 50V	
2364	4822 124 40769	4.7µF 20% 100V	
2365▲	4822 124 41579	10µF 20% 50V	
2366	4822 124 40255	100µF 20% 63V	
2367▲	4822 124 41579	10µF 20% 50V	
2368▲	4822 124 41579	10µF 20% 50V	
2369	4822 121 51252	470nF 5% 63V	
2370	4822 121 51252	470nF 5% 63V	
2372	4822 126 13805	68nF 10 16V	
2373▲	5322 126 10223	4.7nF 10% 63V	
2374	5322 126 10794	220pF 5% 63V	
2375	5322 122 34099	470pF 10% 63V	
2376	5322 122 32531	100pF 5% 50V	
2377	4822 126 13805	68nF 10 16V	
2378▲	5322 126 10223	4.7nF 10% 63V	
2379	5322 126 10794	220pF 5% 63V	
2380	5322 122 34099	470pF 10% 63V	
2381	5322 122 32531	100pF 5% 50V	
2382▲	5322 122 34123	1nF 10% 50V	
2383▲	5322 122 34123	1nF 10% 50V	
2384	4822 121 51252	470nF 5% 63V	
2385	4822 121 51252	470nF 5% 63V	
2386▲	5322 122 34123	1nF 10% 50V	
2387▲	5322 122 34123	1nF 10% 50V	
2388▲	5322 122 34123	1nF 10% 50V	
2389▲	5322 122 34123	1nF 10% 50V	
2390▲	5322 122 34123	1nF 10% 50V	
2392	5322 122 32286	3.3pF 5% 50V	
2393	5322 122 32286	3.3pF 5% 50V	
2394▲	4822 126 10002	100nF 20% 25V	
2395▲	5322 122 34123	1nF 10% 50V	
2396▲	4822 122 33172	390pF 5% 50V	
2397▲	4822 122 33172	390pF 5% 50V	
2398▲	4822 126 10002	100nF 20% 25V	
2400	5322 122 32452	47pF 5% 63V	
2401▲	4822 126 10002	100nF 20% 25V	
2402	5322 122 32268	470pF 10% 50V	
2403	5322 122 32268	470pF 10% 50V	
2404	4822 121 51252	470nF 5% 63V	
2405	5322 122 32658	22pF 5% 50V	
2408▲	4822 126 10002	100nF 20% 25V	
2413	4822 124 41596	22µF 20% 50V	
2415	4822 124 41596	22µF 20% 50V	
2422	4822 124 41584	100µF 20% 10V	
2425	4822 124 41596	22µF 20% 50V	
2427	4822 124 41596	22µF 20% 50V	
2432	4822 124 41584	100µF 20% 10V	
2436	5322 126 10511	1nF 5% 50V	
2437	5322 126 10511	1nF 5% 50V	
2438	5322 126 10511	1nF 5% 50V	
2448	5322 126 10511	1nF 5% 50V	
2449	5322 126 10511	1nF 5% 50V	
2450	5322 122 31946	27pF 5% 63V	
2452▲	5322 126 10223	4.7nF 10% 63V	
2453▲	5322 126 10223	4.7nF 10% 63V	
2454▲	5322 126 10223	4.7nF 10% 63V	
2455▲	5322 126 10223	4.7nF 10% 63V	

3356	4822 051 20331	330Ω 5% 0.1W	
3357	4822 051 20122	1k2 5% 0.1W	
3358	4822 051 20471	470Ω 5% 0.1W	
3359	4822 051 20473	47k 5% 0.1W	
3360	4822 116 52284	47k 5% 0.5W	
3361	4822 116 52283	4k7 5% 0.5W	
3362	4822 051 20473	47k 5% 0.1W	
3363	4822 117 11449	2k2 1% 0.1W	
3364▲	4822 051 20472	4k7 5% 0.1W	
3365	4822 051 20473	47k 5% 0.1W	
3366	4822 051 20333	33k 5% 0.1W	
3367	4822 051 20473	47k 5% 0.1W	
3368	4822 051 20331	330Ω 5% 0.1W	
3369	4822 051 20122	1k2 5% 0.1W	
3370	4822 051 20471	470Ω 5% 0.1W	
3371	4822 051 20473	47k 5% 0.1W	
3372	4822 116 52284	47k 5% 0.5W	
3373	4822 116 52283	4k7 5% 0.5W	
3374	4822 051 20473	47k 5% 0.1W	
3375	4822 117 11449	2k2 1% 0.1W	
3376▲	4822 051 20472	4k7 5% 0.1W	
3377	4822 051 20473	47k 5% 0.1W	
3378	4822 051 20333	33k 5% 0.1W	
3379	4822 051 20473	47k 5% 0.1W	
3380	4822 116 52175	100Ω 5% 0.5W	
3381	4822 116 52175	100Ω 5% 0.5W	
3382▲	4822 051 20332	3k3 5% 0.1W	
3383▲	4822 051 20332	3k3 5% 0.1W	
3384	4822 051 20473	47k 5% 0.1W	
3385	4822 051 20334	330k 5% 0.1W	
3386	4822 051 20334	330k 5% 0.1W	
3387▲	4822 051 20332	3k3 5% 0.1W	
3388	4822 051 20334	330k 5% 0.1W	
3389▲	4822 051 20332	3k3 5% 0.1W	
3390	4822 116 52272	330k 5% 0.5W	
3391	4822 051 20563	56k 5% 0.1W	
3391	4822 051 20822	8k2 5% 0.1W	
3395▲	4822 051 20008	0Ω (jumper)	
3413	4822 117 10833	10k 1% 0.1W	
3414	4822 051 20822	8k2 5% 0.1W	
3415	4822 051 20473	47k 5% 0.1W	
3416	4822 051 10102	1k 2% 0.25W	
3420	4822 051 20563	56k 5% 0.1W	
3421	4822 051 20683	68k 5% 0.1W	
3422	4822 116 52199	68Ω 5% 0.5W	
3425	4822 117 10833	10k 1% 0.1W	
3426	4822 051 20822	8k2 5% 0.1W	
3427	4822 051 20473	47k 5% 0.1W	
3428	4822 051 10102	1k 2% 0.25W	
3430	4822 051 20563	56k 5% 0.1W	
3431	4822 051 20683	68k 5% 0.1W	
3432	4822 116 52199	68Ω 5% 0.5W	
3433	4822 051 20331	330Ω 5% 0.1W	

5350	4822 157 53139	4.7µH	
5351▲	4822 157 51462	10µH	
5352	4822 157 53139	4.7µH	
5353	4822 157 53139	4.7µH	

6384▲	4822 130 30621	1N4148	
6385	4822 130 34486	BZX79-F12	

7350▲	4822 209 83163	LM833N	
7351▲	4822 209 83163	LM833N	
7352	5322 209 10576	HEF4053BP	
7353	4822 209 14894	MSP3410B-F7 (Nicam)	
7353	4822 209 90562	MSP3400-TC15 (non-Nicam)	
7382▲	5322 130 41982	BC848B	
7383▲	5322 130 41982	BC848B	
7387▲	5322 130 41982	BC848B	
7389▲	5322 130 41982	BC848B	
7415▲	5322 130 41982	BC848B	
7420▲	5322 130 41982	BC848B	
7421	5322 130 41983	BC858B	
7427▲	5322 130 41982	BC848B	
7430▲	5322 130 41982	BC848B	
7431	5322 130 41983	BC858B	
7432▲	5322 130 41982	BC848B	

NICAM L MODULE [D2]

Various

	4822 212 10919	Nicam L Module
1000	4822 242 81436	OFWK3953M 38.9MHz

2000▲	5322 126 10223	4.7nF 10% 63V
2001	4822 126 13161	100nF 10% 25V
2002	4822 126 13473	220nF 20% 50V
2003	4822 126 13161	100nF 10% 25V
2006	4822 124 40763	2.2µF 100 V
2008	4822 124 40763	2.2µF 100 V
2009	4822 124 40763	2.2µF 100 V

3000	4822 051 20562	5k6 5% 0.1W
3002	4822 051 20471	470Ω 5% 0.1W
3003	4822 051 20223	22k 5% 0.1W

5001	4822 157 11014	Adj. coil

7001	4822 209 13003	TDA9811/V3
7002▲	5322 130 41982	BC848B

CTI/BS PANEL [F]

Various

	4822 212 10921	CTI/BIStr. Module
	4822 265 10419	12P F-pin conn.

2279▲	4822 124 40433	47µF 20% 25V
2280	4822 122 33575	220pF 5% 50V
2281	4822 122 33575	220pF 5% 50V
2282	4822 124 42058	33µF 20% 50V
2283	4822 124 80791	470µF 20% 16V
2284	5322 122 32531	100pF 5% 50V
2285▲	5322 122 32654	22nF 10% 63V
2286	4822 121 51319	1µF 10% 63V
2288	5322 122 32531	100pF 5% 50V
2289	5322 122 31863	330pF 5% 50V
2291	5322 121 42661	330nF 5% 63V

3276	4822 051 20272	2k7 5% 0.1W
3277	4822 051 20471	470Ω 5% 0.1W
3278▲	4822 051 20332	3k3 5% 0.1W
3279	4822 117 11449	2k2 1% 0.1W
3280	4822 051 20822	8k2 5% 0.1W
3281	4822 117 11383	12k 1% 0.1W
3282	4822 051 20334	330k 5% 0.1W
3283	4822 051 20183	18k 5% 0.1W
3284	4822 051 20271	270Ω 5% 0.1W
3285	4822 051 10102	1k 2% 0.25W
3288▲	4822 052 10399	39Ω 5% 0.33W
3289	4822 051 20271	270Ω 5% 0.1W
3290	4822 051 20122	1k2 5% 0.1W
3291	4822 051 20271	270Ω 5% 0.1W
3292▲	4822 052 10689	68Ω 5% 0.33W
3293	4822 051 20391	390Ω 5% 0.1W
3294	4822 051 20471	470Ω 5% 0.1W
3295	4822 117 11139	1k5 1% 0.1W
3296	4822 051 10102	1k 2% 0.25W
3297	4822 117 11383	12k 1% 0.1W
3298	4822 051 20333	33k 5% 0.1W

6270	4822 130 34197	BZX79-C12
6279	4822 130 80655	BZX79-F2V4

7276▲	5322 130 41982	BC848B
7277	4822 209 14895	TDA4566/V2
7280	5322 130 41983	BC858B
7281	4822 209 30711	CX20125
7282▲	5322 130 41982	BC848B
7283	5322 130 41983	BC858B

NS PANEL [G]

Various

	4822 212 10958	NS Panel

2012	4822 121 41857	10nF 5% 250V
2013	4822 121 10618	62nF 2% 63V
2018	4822 121 41857	10nF 5% 250V

3010	4822 116 80176	1Ω 5% 0.5W
3011	4822 116 80176	1Ω 5% 0.5W
3012	4822 116 52175	100Ω 5% 0.5W
3013	4822 116 52289	5k6 5% 0.5W
3019	4822 116 80176	1Ω 5% 0.5W
3998	4822 116 52175	100Ω 5% 0.5W

5010	4822 157 11017	330µH 10%
5011	4822 157 71033	NS corr. coil
5013▲	4822 142 40344	Driver transformer
5014	4822 157 62552	2.2µH

6011▲	4822 130 31631	BYV10-20

7010	4822 130 63441	FET J108
7011	4822 130 63441	FET J108

Top Control & Side IO

MAINS PANEL [I]

Various

	4822 212 10975	Mains/RC5/LED panel
0022▲	4822 276 13592	Mains switch
▲	4822 265 30389	2P conn. vert. K12
▲	4822 267 51348	2P conn. K09
	4822 265 31246	6P conn. K41A
	4822 265 10423	3P connector K45
1600	4822 212 30842	IR Rec. TFMS5360

2601	4822 124 11485	100µF 20% 16V
2604	4822 124 11486	220µF 20% 16V

3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 116 52175	100Ω 5% 0.5W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W
3605	4822 116 52175	100Ω 5% 0.5W

6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320 Bi.col LED

Side I/O [J]

Various

	4822 459 04021	Side IO Panel
	4822 267 31014	3.5mm headphone
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31245	4P conn. H44

2800	4822 124 41596	22µF 20% 50V
2801	4822 124 41596	22µF 20% 50V
2804	4822 122 33805	330pF 10% 63V
2805	4822 122 33805	330pF 10% 63V
2810▲	4822 122 33342	33nF 10% 63V
2811	4822 124 41643	100µF 20% 16V
2813	4822 124 41576	2.2µF 20% 50V
2832▲	4822 122 33177	10nF 20% 50V
2834▲	4822 122 33177	10nF 20% 50V

3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 80175	4k7 5% 0.5W
3804	4822 116 80175	4k7 5% 0.5W
3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3808	4822 051 20101	100Ω 5% 0.1W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 051 20824	820k 5% 0.1W
3811	4822 051 20393	39k 5% 0.1W
3813▲	4822 051 20008	0Ω (jumper)
3814▲	4822 051 20472	4k7 5% 0.1W
3830	4822 116 80173	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W
3842	4822 116 80173	10k 5% 0.5W
3998	4822 116 52219	330Ω 5% 0.5W
3999	4822 117 10353	150Ω 1% 0.1W

6803	4822 130 82346	LLZ-C27
6804	4822 130 82346	LLZ-C27
6805	4822 130 82346	LLZ-C27
6806	4822 130 82346	LLZ-C27

7811	5322 130 41983	BC858B
7812	5322 130 41983	BC858B
7840▲	5322 130 41982	BC848B

TOP CONTROL [J]

Various

	4822 212 10976	Top control panel
	4822 276 13396	Push button
	4822 265 10449	3P conn. H45

3630	4822 116 52238	12k 5% 0.5W
3631	4822 116 52289	5k6 5% 0.5W
3632	4822 116 52224	470Ω 5% 0.5W
3633	4822 050 24702	4k7 1% 0.6W
3634	4822 116 52175	100Ω 5% 0.5W

Side Control & IO

MAINS PANEL [I]

Various

1000	4822 212 10929	Mains/RC5/LED panel
▲	4822 276 13603	Mains switch
	4822 265 31246	6P conn. K41
	4822 265 31248	3P conn. K42
▲	4822 265 30389	2P conn. vert. K101
▲	4822 267 51348	2P conn. K104
▲	4822 256 91766	LED holder
1600	4822 130 83821	GP1U720Q IR rec.

2601	4822 124 41584	100µF 20% 10V

3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 050 11002	1k 1% 0.4W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W
3605	4822 116 52175	100Ω 5% 0.5W

6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320

Side Control + IO [J]

Various

1055	4822 212 10931	Side Control+IO panel
	4822 267 31014	3.5mm headphone
	4822 276 30422	Push buttons (3x)
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31248	3P conn. H42
	4822 265 31245	4P conn. H44

2800	4822 124 41596	22µF 20% 50V
2801	4822 124 41596	22µF 20% 50V
2804	4822 126 13597	330pF 10% 500V
2805	4822 126 13597	330pF 10% 500V
2810	5322 121 42489	33nF 5% 250V
2811	4822 124 81029	100µF 20% 25V
2813	4822 124 40763	2.2µF 100V
2832	4822 121 41677	10nF 10% 400V
2834	4822 121 41677	10nF 10% 400V
2840	4822 126 13599	3.3nF 10% 500V

3000	4822 116 52257	22k 5% 0.5W
3608	4822 116 52238	12k 5% 0.5W
3609	4822 116 52289	5k6 5% 0.5W
3610	4822 116 52224	470Ω 5% 0.5W
3611	4822 050 24702	4k7 1% 0.6W
3612	4822 116 52175	100Ω 5% 0.5W
3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 52289	5k6 5% 0.5W
3804	4822 116 52289	5k6 5% 0.5W
3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 116 52305	820k 5% 0.5W
3811	4822 116 83882	39k 5% 0.5W
3812	4822 116 83864	10k 5% 0.5W
3813	4822 116 52283	4k7 5% 0.5W
3830	4822 116 83864	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W
3842	4822 116 83864	10k 5% 0.5W

7811▲	4822 130 44197	BC558B
7812▲	4822 130 44197	BC558B
7840	4822 130 40937	BC548B

LARGE SIGNAL PANEL [A]

Various

	4822 265 41461	10P conn. L10,11,15
	4822 265 40421	6P conn. L19
	4822 265 10742	7P conn. L24
	4822 264 40207	3P conn. L25
	4822 265 31247	3P conn. L28
	4822 265 31245	4P conn. L38
▲	4822 265 30389	2P conn. L01,L02
▲	4822 256 92053	Fuse holder
▲	4822 492 62076	Spring transistor
	4822 492 70871	Spring
	4822 404 31484	LOT bracket (21")
	4822 404 31488	LOT bracket
	4822 404 31483	Heat sink bracket
1463▲	4822 252 11194	19398E1 (0,800A)
1501▲	4822 070 33152	2183.15(3.15A)
1566▲	4822 252 51175	19398E1(2,500)
1572▲	4822 071 52502	19372(2.5A)
1580▲	4822 252 51186	19398E1(2,0A)

Capacitors

2400	4822 124 81257	47µF 10% 200V
2401	4822 121 42004	10nF 10% 400V
2409	4822 121 43875	47nF 5% 250V
2410	4822 121 41857	10nF 5% 250V
2411	4822 121 43875	47nF 5% 250V
2412	4822 122 31175	1nF 10% 500V
2423	4822 121 10507	470nF 5% 250V
2424	4822 124 81319	1µF 20% 160V
2425▲	4822 121 70434	11nF 5% 1.6KV
2425▲	5322 121 44345	15nF 5% 1.6KV
2426▲	4822 121 42934	27nF 10% 400V
2427	4822 121 10506	560nF 5% 250V
2427	4822 121 10507	470nF 5% 250V
2427▲	4822 121 10563	0.82µF 5% 250V
2433▲	4822 126 12274	1500pF 10% 2KV
2442	4822 124 81141	4.7µF 20% 160V
2450	4822 121 10619	220nF 10% 250V
2450▲	4822 121 40618	100nF 10% 250V
2451	4822 121 51252	470nF 5% 63V
2460	4822 126 11157	470pF 10% 500V
2461	4822 124 80791	470µF 20% 16V
2462	4822 124 80791	470µF 20% 16V
2463	4822 126 11157	470pF 10% 500V
2464	5322 124 41468	1000µF 20% 40V
2465	4822 126 11157	470pF 10% 500V
2466	4822 124 41334	470µF 20% 35V
2470	4822 126 12638	6.8nF 5% 50V
2471	4822 126 13614	4.7nF 10% 50V
2480	4822 124 40769	4.7µF 20% 100V
2481	4822 126 11157	470pF 10% 500V
2487▲	4822 124 40433	47µF 20% 25V
2500▲	4822 121 70285	470nF 10% 250V
2501	4822 121 70141	33nF 5% 400V
2504	4822 122 31175	1nF 10% 500V
2505▲	4822 124 11772	150µF 20% 385V
2505▲	4822 124 23492	220µF 50% 385V
2506▲	4822 121 40487	100nF 10% 400V
2507	4822 124 81029	100µF 20% 25V
2508	4822 121 42007	100nF 10% 100V
2511▲	4822 126 11141	2.2nF 10% 1KV
2512▲	4822 126 11141	2.2nF 10% 1KV
2520	4822 124 81029	100µF 20% 25V
2521	4822 126 13498	82pF 5% 50V
2522	4822 122 31175	1nF 10% 500V
2524	5322 121 42386	100nF 5% 63V
2525	4822 124 22263	220µF 20% 25V
2526	4822 126 11157	470pF 10% 500V
2530	4822 124 40769	4.7µF 20% 100V
2531	4822 121 43066	1nF 1% 400V
2533	4822 124 41596	22µF 20% 50V
2534	4822 122 33302	1nF 5% 50V
2535	4822 126 12451	820pF 10% 50V
2538	4822 122 33531	2.2nF 10% 50V
2540▲	4822 126 12426	330pF 10% 1KV
2542	4822 126 13595	220pF 10% 1KV
2543▲	4822 126 13451	2.2nF 10% 2KV
2544▲	4822 126 13451	2.2nF 10% 2KV
2550▲	4822 126 10727	3.3nF 20% 400V
2554	5322 121 42386	100nF 5% 63V
2557	5322 121 42489	33nF 5% 250V
2559▲	4822 124 40433	47µF 20% 25V
2561	4822 124 41458	4700µF 20% 16V
2563	4822 124 81139	2200µF 20% 16V
2565	4822 124 81029	100µF 20% 25V
2568▲	4822 126 12426	330pF 10% 1KV
2569	4822 124 81257	47µF 10% 200V
2570	4822 121 51379	82nF 5% 63V
2572	4822 122 31175	1nF 10% 500V
2573	4822 124 41663	2200µF 20% 35V
2575	4822 126 13646	120P 5% 50V
2580	4822 124 40723	2200µF 20% 16V
2581	4822 122 31175	1nF 10% 500V
2582	4822 124 81029	100µF 20% 25V
2592	4822 121 43526	47nF 5% 250V
2593	5322 121 42386	100nF 5% 63V
2602	4822 126 10334	470pF 10% 50V
2603	4822 126 13499	220pF 5% 50V
2604	4822 122 33302	1nF 5% 50V
2605	4822 122 33302	1nF 5% 50V
2606	4822 122 33302	1nF 5% 50V
2607	4822 122 33302	1nF 5% 50V
2608	4822 122 33302	1nF 5% 50V
2609▲	4822 124 40433	47µF 20% 25V
2750	4822 124 22263	220µF 20% 25V
2751	4822 124 40756	1µF 20% 100V
2751▲	4822 124 41579	10µF 20% 50V
2752	4822 124 40769	4.7µF 20% 100V
2752▲	4822 124 41579	10µF 20% 50V
2755	4822 124 41663	2200µF 20% 35V
2756	4822 124 22263	220µF 20% 25V
2760	4822 122 31175	1nF 10% 500V
2763▲	4822 124 41579	10µF 20% 50V
2764	4822 124 41596	22µF 20% 50V
2765	4822 124 80215	1000µF 20% 35V
2766	4822 124 80215	1000µF 20% 35V
2776	4822 122 31175	1nF 10% 500V
2778	4822 126 11157	470pF 10% 500V
2778	4822 126 11501	1.5nF 10% 500V
2787	4822 121 41856	22nF 5% 250V
2788	4822 121 41856	22nF 5% 250V
2789	4822 124 40756	1µF 20% 100V
2789	4822 124 40769	4.7µF 20% 100V

Resistors

3401▲	4822 052 11229	22Ω 5% 0.5W
3402▲	4822 052 11229	22Ω 5% 0.5W
3411	4822 116 52283	4k7 5% 0.5W
3414	4822 116 52176	10Ω 5% 0.5W
3415	4822 117 12517	5k6 5% 5W
3415	4822 117 12618	2k2 5% 5W
3417	4822 116 52195	47Ω 5% 0.5W
3420	4822 053 21684	680k 5% 0.5W
3421	4822 116 52283	4k7 5% 0.5W
3421	4822 116 83864	10k 5% 0.5W
3430▲	4822 052 11471	470Ω 5% 0.5W
3431	4822 116 52243	1k5 5% 0.5W
3432	4822 116 52243	1k5 5% 0.5W
3433	4822 116 52284	47k 5% 0.5W
3434	4822 116 52297	68k 5% 0.5W
3434	4822 116 83882	39k 5% 0.5W
3435	4822 116 52297	68k 5% 0.5W
3435	4822 116 83882	39k 5% 0.5W
3443▲	4822 052 10688	6Ω8 5% 0.33W
3450	4822 116 52304	82k 5% 0.5W
3450	4822 116 83882	39k 5% 0.5W
3451	4822 116 83882	39k 5% 0.5W
3452	4822 116 83882	39k 5% 0.5W
3454	4822 116 83864	10k 5% 0.5W
3455	4822 116 52272	330k 5% 0.5W
3456	4822 116 83961	6k8 5%
3457	4822 116 52244	15k 5% 0.5W
3461▲	4822 052 10228	2Ω2 5% 0.33W
3461▲	4822 052 11158	1Ω5 5% 0.5W
3462▲	4822 052 10228	2Ω2 5% 0.33W
3464▲	4822 052 11568	5Ω6 5% 0.5W
3465	4822 116 81682	2M 2 5% 0.5W
3466	4822 116 52298	680k 5% 0.5W
3466	4822 116 81783	1M 5 5% 0.5W
3467	4822 116 52235	1M 5% 0.5W
3467	4822 116 52298	680k 5% 0.5W
3470	4822 116 52278	390k 5% 0.5W
3472▲	4822 052 10228	2Ω2 5% 0.33W
3480	4822 116 52234	100k 5% 0.5W
3480	4822 116 52304	82k 5% 0.5W
3481	4822 050 11002	1k 1% 0.4W
3482	4822 116 52234	100k 5% 0.5W
3482	4822 116 52304	82k 5% 0.5W
3483▲	4822 050 24708	4Ω7 1% 0.6W
3484▲	4822 050 24708	4Ω7 1% 0.6W
3487	4822 116 52219	330Ω 5% 0.5W
3500▲	4822 116 21224	1MA/387V VDR
3502▲	4822 052 10338	3Ω3 5% 0.33W
3503	4822 111 20403	470Ω 10%
3505	4822 117 12074	7W 1Ω5 10%
3506▲	4822 117 12027	18Ω-3kΩ 25% PTC
3509	4822 116 52186	22Ω 5% 0.5W
3510	4822 116 52283	4k7 5% 0.5W
3511	4822 050 11002	1k 1% 0.4W
3512	4822 116 52243	1k5 5% 0.5W
3518	4822 116 52195	47Ω 5% 0.5W
3519	4822 116 52256	2k2 5% 0.5W
3520	4822 053 12183	18k 5% 3W
3521	4822 116 52304	82k 5% 0.5W
3522	4822 116 52219	330Ω 5% 0.5W
3523	4822 116 52244	15k 5% 0.5W
3524▲	4822 052 10109	10Ω 5% 0.33W
3525	4822 116 52252	180k 5% 0.5W
3526	4822 116 52175	100Ω 5% 0.5W
3527	4822 116 52188	27Ω 5% 0.5W
3528	4822 116 83864	10k 5% 0.5W
3529	4822 116 52207	1k2 5% 0.5W
3530	4822 050 22403	24k 1% 0.6W
3531	4822 116 52303	8k2 5% 0.5W
3532	4822 101 11191	10k 30% 0.1W Pot.
3533	4822 116 52238	12k 5% 0.5W
3534	4822 116 52297	68k 5% 0.5W
3535	4822 116 83864	10k 5% 0.5W
3536	4822 116 52257	22k 5% 0.5W
3537	4822 116 83864	10k 5% 0.5W
3538	4822 050 11002	1k 1% 0.4W
3539	4822 116 83864	10k 5% 0.5W
3540▲	4822 116 83027	0Ω22 5% 3W
3540	4822 117 11716	0Ω27 5% 3W
3541▲	4822 052 10102	1k 5% 0.33W
3542	4822 117 12621	330Ω 5% 5W
3543	4822 117 12621	330Ω 5% 5W
3544	4822 117 12076	5W 22k 5%
3545▲	4822 052 10159	15Ω 5% 0.33W
3553	4822 050 11002	1k 1% 0.4W
3554	4822 116 52175	100Ω 5% 0.5W
3555	4822 050 21604	160k 1% 0.6W
3556	4822 116 52175	100Ω 5% 0.5W
3557	4822 116 52234	100k 5% 0.5W
3558	4822 116 52263	2k7 5% 0.5W
3559	4822 101 11186	470Ω 30% 0.1W Pot
3560	4822 116 52256	2k2 5% 0.5W
3561	4822 116 83864	10k 5% 0.5W
3568	4822 116 52234	100k 5% 0.5W
3568	4822 116 52297	68k 5% 0.5W
3570	4822 116 52213	180Ω 5% 0.5W
3573	4822 053 12108	1Ω 5% 3W
3579	4822 116 80176	1Ω 5% 0.5W
3588▲	4822 052 11338	3Ω3 5% 0.5W
3589	4822 116 52235	1M 5% 0.5W
3590	4822 116 52284	47k 5% 0.5W
3591	4822 116 83872	220Ω 5% 0.5W
3592	4822 116 83864	10k 5% 0.5W
3593	4822 050 11002	1k 1% 0.4W
3594	4822 116 83864	10k 5% 0.5W
3595	4822 116 52303	8k2 5% 0.5W
3596	4822 050 11002	1k 1% 0.4W
3597	4822 116 83864	10k 5% 0.5W
3598	4822 116 52234	100k 5% 0.5W
3601	4822 116 81039	1Ω8 5% 0.5W
3601	4822 116 81154	2Ω2 5% 0.5W
3601	4822 116 81155	3Ω9 5% 0.5W
3602	4822 116 81039	1Ω8 5% 0.5W
3602	4822 116 81154	2Ω2 5% 0.5W
3602	5322 116 53564	3Ω3 5% 0.5W
3603	4822 116 81154	2Ω2 5% 0.5W
3603	4822 116 81155	3Ω9 5% 0.5W
3603	5322 116 53564	3Ω3 5% 0.5W
3604	4822 116 80176	1Ω 5% 0.5W
3605	4822 116 52186	22Ω 5% 0.5W
3606	4822 050 11002	1k 1% 0.4W
3607	4822 116 52226	560Ω 5% 0.5W
3608	4822 050 11002	1k 1% 0.4W
3609	4822 116 81682	2M 2 5% 0.5W
3610	4822 116 52249	1k8 5% 0.5W
3611	4822 116 52249	1k8 5% 0.5W
3612	4822 116 52283	4k7 5% 0.5W
3613	4822 116 83864	10k 5% 0.5W
3614	4822 116 52243	1k5 5% 0.5W
3615	4822 116 52276	3k9 5% 0.5W
3616	4822 116 52284	47k 5% 0.5W
3617	4822 116 83874	220k 5% 0.5W
3618	4822 116 83872	220Ω 5% 0.5W
3619	4822 116 83872	220Ω 5% 0.5W
3620	4822 116 52175	100Ω 5% 0.5W
3621	4822 116 80176	1Ω 5% 0.5W
3623	4822 116 52234	100k 5% 0.5W
3624	4822 116 52256	2k2 5% 0.5W
3752▲	4822 052 10828	8Ω2 5% 0.33W
3753▲	4822 052 10828	8Ω2 5% 0.33W
3754	4822 116 52256	2k2 5% 0.5W
3756	4822 116 52269	3k3 5% 0.5W
3757	4822 116 52279	4k3 5% 0.5W
3758	4822 116 52257	22k 5% 0.5W
3759	4822 116 52291	56k 5% 0.5W
3760	4822 050 11002	1k 1% 0.4W
3760	4822 116 52249	1k8 5% 0.5W
3761	4822 116 52256	2k2 5% 0.5W
3761	4822 116 52269	3k3 5% 0.5W
3762	4822 116 52206	120Ω 5% 0.5W
3762	4822 116 52283	4k7 5% 0.5W
3763	4822 116 52257	22k 5% 0.5W
3764	4822 116 52303	8k2 5% 0.5W
3765	4822 116 52283	4k7 5% 0.5W
3766	4822 116 52239	120k 5% 0.5W
3767	4822 116 52256	2k2 5% 0.5W

Coils

5400	4822 157 71401	27µH
5401	4822 157 71403	15µH
5410▲	4822 142 40351	Line drive transf.
5421▲	4822 157 63079	LC coil (21")
5421▲	4822 157 10992	LC coil (other)
5424▲	4822 157 53069	Balance coil
5430▲	4822 140 10595	LOT ELDOR (21")
5430▲	4822 140 10584	LOT CML16P
5463	4822 156 20915	33µH
5463	4822 157 52392	27µH
5480▲	4822 158 10728	Bridge coil. 11µH
5503▲	4822 142 40315	Mains filter
5525	4822 157 70826	2.4µH
5542	4822 157 70826	2.4µH
5544	4822 157 70826	2.4µH
5545	4822 157 70826	2.4µH
5550▲	4822 146 10366	Transf. CE425V
5550▲	4822 146 31469	transf. 10290250
5567	4822 157 70826	2.4µH
5572	4822 157 10452	10µH 10%
5572	4822 157 71466	2.2µH 20%
5750	4822 157 10452	10µH 10%
5751	4822 157 10452	10µH 10%

Diodes

6423▲	4822 130 41275	BY228/20
6424▲	4822 130 41602	BYW95C/20
6425	4822 130 42488	BYD33D
6426	4822 130 42488	BYD33D
6441	4822 130 42488	BYD33D
6450	4822 130 34281	BZX79-C15
6457▲	4822 130 30621	1N4148
6460	4822 130 42488	BYD33D
6462	4822 130 70055	BYV27-400
6463	4822 130 70055	BYV27-400
6480▲	4822 130 30621	1N4148
6481▲	4822 130 30621	1N4148
6482	4822 130 34258	BZX79-C56
6501	4822 130 34281	BZX79-C15
6503	4822 130 34281	BZX79-C15
6507	4822 130 42488	BYD33D
6508	4822 130 42606	BYD33J
6509	4822 130 80655	BZX79-F2V4
6510▲	4822 130 31933	1N5061
6511▲	4822 130 31933	1N5061
6512▲	4822 130 31933	1N5061
6513▲	4822 130 31933	1N5061
6524▲	4822 130 31631	BYV10-20
6525	4822 130 42488	BYD33D
6530▲	4822 130 30621	1N4148
6542	4822 130 42606	BYD33J
6545	4822 130 41487	BYV95C
6560	4822 130 34174	BZX79-C4V7
6561	4822 130 42488	BYD33D
6562	4822 130 42488	BYD33D
6567	4822 130 70055	BYV27-400
6567	4822 130 81123	BY229F-800
6571▲	4822 130 31982	BYV27-100
6572	4822 130 80791	BYV28-200/20
6580	4822 130 42488	BYD33D
6590	4822 130 42606	BYD33J
6591▲	4822 130 30621	1N4148
6592	4822 130 83704	BZX79-F13
6600▲	4822 130 30621	1N4148
6601▲	4822 130 30621	1N4148
6763▲	4822 130 30621	1N4148
6764	4822 130 34281	BZX79-C15

Integrated Circuits

7410	4822 130 42159	BF819
7420▲	4822 130 63271	BU2508AF
7421▲	4822 130 10779	BU1506DX
7450▲	4822 130 44197	BC558B
7480	4822 130 63726	MTP3055EFI
7507	4822 130 20296	BT137-600D
7520▲	4822 209 90025	MC44603P
7540	4822 130 63787	STP4NA60FI
7541	4822 130 63698	STH8NA60FI
7555	4822 209 81397	TL431CLP
7556▲	4822 130 10025	CNX82A
7560	4822 209 72042	MC78L05ACP
7561▲	4822 130 44197	BC558B
7569	4822 209 90281	L78MXX

7580▲	4822 209 80817	MC7800
7590	4822 130 20293	P0102BA
7591▲	4822 130 44197	BC558B
7592	4822 130 40937	BC548B
7593	4822 130 40937	BC548B
7600	4822 130 42446	BD536
7601	4822 130 60775	2SD1266P
7602▲	4822 130 41344	BC337-40
7603	4822 130 44568	BC557B
7604	4822 130 44568	BC557B
7605▲	4822 130 44197	BC558B
7606	4822 130 44568	BC557B
7760	4822 130 40937	BC548B
7761	4822 209 32641	TDA2616Q/N1
7763	4822 130 40937	BC548B

SMALL SIGNAL PANEL [B]

Various

	4822 265 41461	10P conn. S10,S11,S15
	4822 265 41451	9P conn. S33,S44
	4822 265 31246	6P conn. S41
	4822 267 31987	Pr.conn. S100
	4822 404 31487	Bracket SSP
	4822 404 31527	Bracket Nicam L
1000	4822 210 10691	Tuner UV916S
1000	4822 210 10731	Tuner U944S (UHF only)
1031	4822 242 82062	OFWL9454 38.9MHz (BGLI)
1032	4822 242 80303	OFWG9251M 38.9MHz (BGDK/BG)
1032	4822 242 81519	OFWK9260M 38.9MHz (I)
1032	4822 242 81854	OFWG9353M 38.9MHz (BGLI)
1100▲	4822 071 51001	Fuse 19372(100mA)
1116	4822 242 80295	OFWG3962M 38.9MHz (BG)
1116	4822 242 81436	OFWK3953M 38.9MHz (other)
1117	4822 242 10692	Xtal 4,433619 MHz
1122	4822 153 30025	Filt. TPS 6MHz (BGI)
1122	4822 242 72211	Filt. TPS 5.5MHz (other)
1651	4822 242 81946	Xtal 8MHz
1700	4822 242 81962	Xtal 13.875MHz

⊣⊢

2004	4822 122 33797	47nF 20% 50V
2008▲	4822 124 40196	220µF 20% 16V (BGLI)
2008	4822 124 81029	100µF 20% 25V (other)
2009▲	4822 124 41579	10µF 20% 50V
2032	4822 124 40756	1µF 20% 100V
2033▲	5322 126 10223	4.7nF 10% 63V
2034▲	5322 126 10223	4.7nF 10% 63V
2036▲	5322 126 10223	4.7nF 10% 63V
2037▲	4822 124 41579	10µF 20% 50V
2037	4822 124 80791	470µF 20% 16V
2101▲	5322 126 10223	4.7nF 10% 63V
2102	5322 126 12415	18pF 5% 50V
2103	4822 126 13161	100nF 10% 25V
2104▲	5322 126 10223	4.7nF 10% 63V
2105▲	5322 126 10223	4.7nF 10% 63V
2106	4822 125 50062	1.4-10pF 250V
2108▲	5322 126 10223	4.7nF 10% 63V
2109	4822 124 40756	1µF 20% 100V
2111	4822 126 13159	180pF 5% 50V
2112	4822 126 13162	56pF 5% 50V
2113	5322 122 33537	1.2pF 5% 63V
2115	4822 126 13473	220nF 20% 50V
2116	4822 126 13473	220nF 20% 50V
2117	4822 126 13473	220nF 20% 50V
2119	4822 126 13473	220nF 20% 50V
2122	4822 126 13869	470nF 20% 16V
2124	4822 124 81029	100µF 20% 25V
2125▲	4822 122 33177	10nF 20% 50V
2126	4822 124 40756	1µF 20% 100V
2127▲	4822 124 41579	10µF 20% 50V
2128	4822 126 13161	100nF 10% 25V
2129	4822 126 13161	100nF 10% 25V
2132	4822 126 13161	100nF 10% 25V
2133	4822 126 13161	100nF 10% 25V
2136▲	5322 122 34123	1nF 10% 50V
2137▲	4822 126 10002	100nF 20% 25V
2138▲	4822 122 33177	10nF 20% 50V
2139▲	4822 122 33177	10nF 20% 50V
2140▲	5322 122 34123	1nF 10% 50V
2141	4822 126 13161	100nF 10% 25V
2142	4822 126 13161	100nF 10% 25V
2143	4822 126 13161	100nF 10% 25V
2144▲	5322 122 34123	1nF 10% 50V
2145▲	5322 122 34123	1nF 10% 50V
2154	4822 124 81286	47µF 20% 16V
2156	4822 126 13161	100nF 10% 25V
2157	4822 126 13161	100nF 10% 25V
2158▲	4822 124 40433	47µF 20% 25V
2160	4822 126 13689	18pF 1% 63V
2161	4822 126 13161	100nF 10% 25V (PAL)
2161	4822 126 13482	470nF 20% 16V (P/Sec.)
2162▲	5322 126 10223	4.7nF 10% 63V (P/Sec.)
2162	5322 126 10465	3.9nF 10% 63V (PAL)
2167	4822 124 81029	100µF 20% 25V
2169▲	4822 122 33177	10nF 20% 50V
2170▲	5322 126 10223	4.7nF 10% 63V
2171▲	4822 122 33177	10nF 20% 50V
2172	5322 122 32531	100pF 5% 50V
2173	4822 124 40756	1µF 20% 100V
2175▲	5322 122 34123	1nF 10% 50V
2176▲	5322 122 34123	1nF 10% 50V
2177	4822 121 70661	100N 5% 63V
2178	4822 126 13161	100nF 10% 25V
2179▲	4822 124 40433	47µF 20% 25V
2180	4822 126 13482	470nF 20% 16V
2181	4822 126 13482	470nF 20% 16V
2182	4822 126 13161	100nF 10% 25V
2196	5322 122 32448	10pF 5% 50V
2600▲	4822 124 41579	10µF 20% 50V
2601	4822 126 13161	100nF 10% 25V
2606▲	4822 122 33177	10nF 20% 50V
2607▲	4822 122 33177	10nF 20% 50V
2650	5322 122 31946	27pF 5% 63V
2651	5322 122 31946	27pF 5% 63V
2652	5322 122 32448	10pF 5% 50V
2653	5322 122 32448	10pF 5% 50V
2655▲	5322 122 34123	1nF 10% 50V
2659	4822 124 40756	1µF 20% 100V
2665▲	4822 126 10002	100nF 20% 25V
2685▲	4822 122 33177	10nF 20% 50V
2700▲	4822 122 33177	10nF 20% 50V
2702	5322 126 10794	220pF 5% 63V
2703▲	5322 122 32654	22nF 10% 63V
2704	5322 122 32481	15pF 5% 50V
2705	4822 122 32139	12pF 2% 63V
2707	5322 126 10794	220pF 5% 63V
2708▲	4822 126 10002	100nF 20% 25V
2709▲	4822 122 33177	10nF 20% 50V
2710	5322 122 32452	47pF 5% 63V
2711▲	4822 126 10002	100nF 20% 25V
2712▲	5322 122 32654	22nF 10% 63V
2715▲	4822 124 41579	10µF 20% 50V
2716▲	4822 124 41579	10µF 20% 50V
2800	4822 122 31175	1nF 10% 500V
2801	4822 122 31175	1nF 10% 500V
2805	4822 124 41596	22µF 20% 50V
2812	4822 126 13597	330pF 10% 500V
2813	4822 126 13597	330pF 10% 500V
2817	4822 126 13597	330pF 10% 500V
2830▲	4822 124 41579	10µF 20% 50V
2835	4822 122 31175	1nF 10% 500V
2836	4822 122 31175	1nF 10% 500V
2837▲	4822 126 10002	100nF 20% 25V
2840	4822 122 31175	1nF 10% 500V
2841	4822 122 31175	1nF 10% 500V
2847	4822 124 41596	22µF 20% 50V
2855	4822 126 13597	330pF 10% 500V
2856	4822 124 41596	22µF 20% 50V
2857	4822 126 13597	330pF 10% 500V
2858	4822 124 41596	22µF 20% 50V
2860	4822 126 13161	100nF 10% 25V
2875	5322 121 42386	100nF 5% 63V
2878	4822 126 13473	220nF 20% 50V
2879	4822 126 13473	220nF 20% 50V

⊣□

3003	4822 051 20101	100Ω 5% 0.1W
3007	4822 117 10833	10k 1% 0.1W
3011	4822 051 20101	100Ω 5% 0.1W
3012	4822 051 20122	1k2 5% 0.1W
3014	4822 051 20223	22k 5% 0.1W
3030	4822 051 20223	22k 5% 0.1W
3031▲	4822 051 20472	4k7 5% 0.1W
3032▲	4822 051 20472	4k7 5% 0.1W
3033▲	4822 051 20472	4k7 5% 0.1W
3034	4822 051 20223	22k 5% 0.1W
3035	4822 117 11449	2k2 1% 0.1W
3036	4822 051 20223	22k 5% 0.1W
3037	4822 051 20223	22k 5% 0.1W
3038	4822 051 20223	22k 5% 0.1W
3039	4822 051 20223	22k 5% 0.1W
3040▲	4822 052 10479	47Ω 5% 0.33W
3100	4822 051 20682	6k8 5% 0.1W
3103	4822 116 52226	560Ω 5% 0.5W
3104	4822 117 10833	10k 1% 0.1W
3105	4822 116 52245	150k 5% 0.5W
3106	4822 051 20223	22k 5% 0.1W
3107	4822 116 52224	470Ω 5% 0.5W
3110	4822 051 20391	390Ω 5% 0.1W
3111	4822 116 52206	120Ω 5% 0.5W (P/Sec.)
3111	4822 116 83868	150Ω 5% 0.5W (PAL)
3112	4822 051 20331	330Ω 5% 0.1W
3113	4822 116 52235	1M 5% 0.5W
3117	4822 117 10353	150Ω 1% 0.1W
3119	4822 116 52175	100Ω 5% 0.5W
3121	4822 117 10833	10k 1% 0.1W
3122	4822 117 10833	10k 1% 0.1W
3124	4822 116 52291	56k 5% 0.5W
3125	4822 117 10833	10k 1% 0.1W
3126▲	4822 051 20153	15k 5% 0.1W
3127	4822 051 20561	560Ω 5% 0.1W
3128	4822 051 10102	1k 2% 0.25W
3130	4822 117 11449	2k2 1% 0.1W
3131	4822 051 20473	47k 5% 0.1W
3133	4822 051 10102	1k 2% 0.25W
3134	4822 051 20101	100Ω 5% 0.1W
3134	4822 051 20561	560Ω 5% 0.1W
3135	4822 051 20101	100Ω 5% 0.1W
3135	4822 051 20561	560Ω 5% 0.1W
3136	4822 051 20101	100Ω 5% 0.1W
3136	4822 051 20561	560Ω 5% 0.1W
3137	4822 117 11449	2k2 1% 0.1W
3138	4822 117 11449	2k2 1% 0.1W
3139	4822 117 11449	2k2 1% 0.1W
3140	4822 051 20274	270k 5% 0.1W
3141	4822 116 83872	220Ω 5% 0.5W
3142	4822 116 83872	220Ω 5% 0.5W
3143	4822 051 20221	220Ω 5% 0.1W
3144	4822 051 20829	82Ω 5% 0.1W
3145	4822 051 20829	82Ω 5% 0.1W
3146	4822 051 20829	82Ω 5% 0.1W
3149	4822 116 52176	10Ω 5% 0.5W
3150	4822 116 83864	10k 5% 0.5W
3155	4822 116 83872	220Ω 5% 0.5W
3156▲	4822 051 20109	10Ω 5% 0.1W
3162▲	4822 052 10478	4Ω7 5% 0.33W
3164	4822 051 20104	100k 5% 0.1W (PAL)
3164	4822 051 20183	18k 5% 0.1W (P/Sec.)
3169▲	4822 052 10478	4Ω7 5% 0.33W
3170	4822 050 11002	1k 1% 0.4W
3171	4822 117 10833	10k 1% 0.1W
3172	4822 117 10833	10k 1% 0.1W
3173	4822 051 20272	2k7 5% 0.1W
3174	4822 117 10833	10k 1% 0.1W
3175	4822 050 11002	1k 1% 0.4W
3176	4822 050 11002	1k 1% 0.4W
3177	4822 117 10356	39k 1% 0.1W
3178	4822 117 10833	10k 1% 0.1W
3179	4822 051 20333	33k 5% 0.1W
3181	4822 116 52175	100Ω 5% 0.5W
3182	4822 116 52175	100Ω 5% 0.5W
3186▲	4822 052 10478	4Ω7 5% 0.33W
3187	4822 051 20392	3k9 5% 0.1W
3188	4822 051 20334	330k 5% 0.1W
3189	4822 051 20334	330k 5% 0.1W
3190▲	4822 051 20332	3k3 5% 0.1W
3191	4822 050 11002	1k 1% 0.4W
3192	4822 051 20562	5k6 5% 0.1W
3193▲	4822 051 20008	0Ω (jumper)
3196	4822 051 20101	100Ω 5% 0.1W
3602	4822 116 83864	10k 5% 0.5W
3603	4822 051 20331	330Ω 5% 0.1W
3604	4822 116 83864	10k 5% 0.5W
3605	4822 116 52283	4k7 5% 0.5W
3606	4822 116 83864	10k 5% 0.5W
3607	4822 116 52224	470Ω 5% 0.5W
3608	4822 116 52283	4k7 5% 0.5W
3610	4822 116 52283	4k7 5% 0.5W
3611	4822 116 52264	27k 5% 0.5W
3612	4822 051 20512	5k1 5% 0.1W
3613▲	4822 051 20472	4k7 5% 0.1W
3614▲	4822 051 20472	4k7 5% 0.1W
3616▲	4822 051 20472	4k7 5% 0.1W
3617▲	4822 051 20472	4k7 5% 0.1W
3621	4822 116 52283	4k7 5% 0.5W
3623▲	4822 051 20472	4k7 5% 0.1W
3624▲	4822 051 20472	4k7 5% 0.1W
3627	4822 116 52175	100Ω 5% 0.5W
3660	4822 116 83864	10k 5% 0.5W
3661	4822 051 20224	220k 5% 0.1W
3662	4822 050 11002	1k 1% 0.4W
3663	4822 117 11139	1k5 1% 0.1W
3664	4822 116 52231	820Ω 5% 0.5W
3666	4822 117 11139	1k5 1% 0.1W
3669	4822 117 11139	1k5 1% 0.1W
3670▲	4822 051 20472	4k7 5% 0.1W
3680▲	4822 051 20472	4k7 5% 0.1W
3681	4822 051 20101	100Ω 5% 0.1W
3682	4822 051 20101	100Ω 5% 0.1W
3683	4822 117 11449	2k2 1% 0.1W
3684	4822 117 11449	2k2 1% 0.1W
3685	4822 116 52283	4k7 5% 0.5W
3686	4822 117 10833	10k 1% 0.1W
3687	4822 051 20473	47k 5% 0.1W
3688	4822 116 52175	100Ω 5% 0.5W
3689	4822 116 52284	47k 5% 0.5W
3691▲	4822 051 20472	4k7 5% 0.1W
3692▲	4822 051 20472	4k7 5% 0.1W
3693	4822 116 52283	4k7 5% 0.5W
3694	4822 116 52228	680Ω 5% 0.5W
3700	4822 051 20101	100Ω 5% 0.1W
3701	4822 051 20331	330Ω 5% 0.1W
3702	4822 050 11002	1k 1% 0.4W
3703	4822 051 20393	39k 5% 0.1W
3704▲	4822 051 20008	0Ω (jumper)
3705	4822 051 10102	1k 2% 0.25W
3706	4822 116 52175	100Ω 5% 0.5W
3707	4822 116 52175	100Ω 5% 0.5W
3708	4822 051 20221	220Ω 5% 0.1W
3709	4822 051 10102	1k 2% 0.25W
3710	4822 116 83961	6k8 5%
3714	4822 116 83872	220Ω 5% 0.5W
3715	4822 116 83872	220Ω 5% 0.5W
3716	4822 051 20221	220Ω 5% 0.1W
3800	4822 116 52219	330Ω 5% 0.5W
3801	4822 116 52219	330Ω 5% 0.5W
3802	4822 051 20224	220k 5% 0.1W
3803	4822 051 20224	220k 5% 0.1W
3805▲	4822 052 10109	10Ω 5% 0.33W
3806	4822 116 52224	470Ω 5% 0.5W
3808	4822 051 20221	220Ω 5% 0.1W
3810	4822 116 52199	68Ω 5% 0.5W
3812	4822 116 52289	5k6 5% 0.5W
3813	4822 116 52289	5k6 5% 0.5W
3814	4822 116 52201	75Ω 5% 0.5W
3815	4822 116 52202	82Ω 5% 0.5W
3816	4822 116 83961	6k8 5%
3817▲	4822 051 20472	4k7 5% 0.1W
3818	4822 116 52201	75Ω 5% 0.5W
3819	4822 116 52202	82Ω 5% 0.5W
3820	4822 116 52202	82Ω 5% 0.5W
3821	4822 116 52175	100Ω 5% 0.5W
3822	4822 116 52219	330Ω 5% 0.5W
3823	4822 116 52202	82Ω 5% 0.5W
3824	4822 116 52201	75Ω 5% 0.5W
3825	4822 116 52201	75Ω 5% 0.5W
3826▲	4822 051 20121	120Ω 5% 0.1W
3827	4822 116 52219	330Ω 5% 0.5W
3828	4822 050 11002	1k 1% 0.4W
3830	4822 051 20223	22k 5% 0.1W
3831	4822 117 11449	2k2 1% 0.1W
3832	4822 051 20471	470Ω 5% 0.1W
3833	4822 051 20471	470Ω 5% 0.1W
3834	4822 051 20471	470Ω 5% 0.1W
3835	4822 116 52219	330Ω 5% 0.5W
3836	4822 116 52219	330Ω 5% 0.5W
3837	4822 116 83864	10k 5% 0.5W
3840	4822 116 52219	330Ω 5% 0.5W
3841	4822 116 52219	330Ω 5% 0.5W
3842	4822 051 20224	220k 5% 0.1W
3843	4822 051 20224	220k 5% 0.1W
3847▲	4822 052 10109	10Ω 5% 0.33W
3848	4822 116 52224	470Ω 5% 0.5W
3850	4822 051 20471	470Ω 5% 0.1W
3851	4822 051 20821	820Ω 5% 0.1W
3852	4822 051 20681	680Ω 5% 0.1W
3853	4822 116 52199	68Ω 5% 0.5W
3855	4822 116 80175	4k7 5% 0.5W
3856	4822 051 20224	220k 5% 0.1W
3857	4822 116 80175	4k7 5% 0.5W
3858	4822 051 20224	220k 5% 0.1W
3859	4822 116 83961	6k8 5%
3860▲	4822 051 20472	4k7 5% 0.1W
3863	4822 116 52201	75Ω 5% 0.5W
3865	4822 116 52202	82Ω 5% 0.5W
3866	4822 116 52219	330Ω 5% 0.5W
3867	4822 050 11002	1k 1% 0.4W
3869	4822 116 52202	82Ω 5% 0.5W
3875	4822 116 83872	220Ω 5% 0.5W
3879	4822 116 52175	100Ω 5% 0.5W
3888	4822 051 20224	220k 5% 0.1W